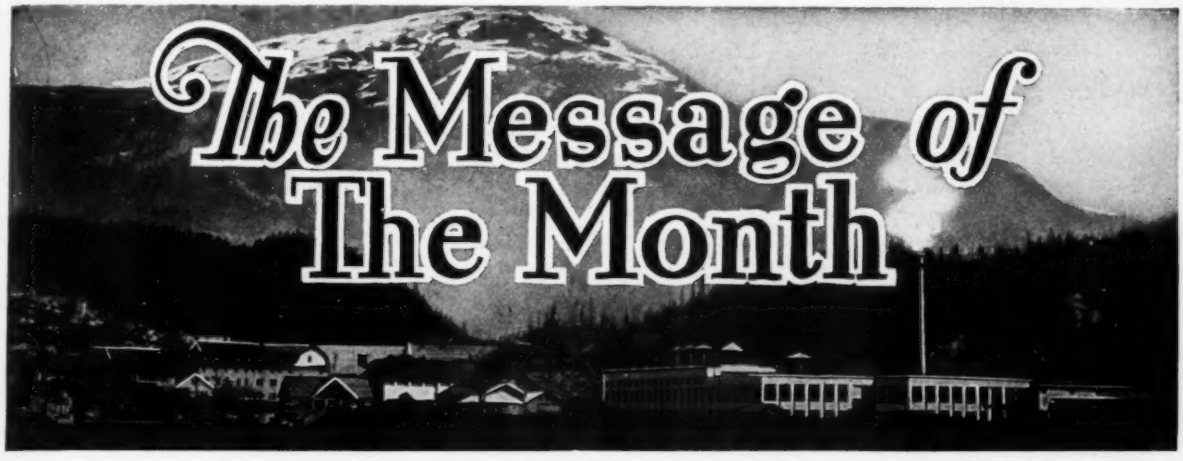

Overproduction and Deficits

WHEN a devastating disease epidemic sweeps over the country, or any division thereof, we immediately mobilize all disease fighting forces, diagnose and locate the infection, take forthwith action to curtail its spread and continued ravages, and eliminate the cause.

This procedure has been so successful that it has the approval and support of the entire country. It has preserved the public health and stands, to-day, as an efficacious guarantee against the recurrence of any deadly disease epidemic.

But while the people of the country enjoy almost perfect immunity from attacks by disease epidemics against their physical well-being, they are now—and have been for well nigh a year—writhing in the throes of a dire industrial disease epidemic which has swept the whole country leaving a devastating record of financial fatalities in its wake.

Now, in any kind of an epidemic, there are three major factors which must be located and known in order to intelligently grapple with and stamp out the disease:

First—The symptoms

Second—The cause

Third—The results.

The symptoms are only important as they point indubitably to the cause.

The cause is the important factor to locate, for when the cause is known and the proper remedy applied, the patient or country is saved from

The moribund results.

Now, the **symptoms** of the present industrial epidemic are the **price-cuttings,** so prevalent in all industrial lines and continuing with gathering intensity in the paper industry at present.

Price-cutting points indubitably to the one and only **cause**—namely, **Overproduction.**

Overproduction of commodities produces price-cutting and "below-cost selling" the symptoms by which we may ever know that overproduction exists and continues, and price-cutting will continue just as long as overproduction exists.

The moribund results are deficits.

Deficits are dead dollars.

Under the heading "deficit" is listed the casualties in dollars which have died in the futile fight against the deadly overproduction disease.

"Deficit" at the end of a paper corporation financial statement says "our casualties in the last six months were three million brave dollars, killed in operation." But, it does not reflect the wounded and maimed dollars remaining in the capital, nor the gross injury done the entire industry.

There is no sense in trying to kid ourselves into the belief that general business will improve while overproduction and price-cutting remain dominant.

The paper industry hasn't a chance on earth to improve. It is shot through and through with the overproduction infection.

Vicious price-cutting is the usual daily practice in every division testifying in clarion tones to the overproduction existing therein.

Overproduction enables buyers to set their own prices. They know nothing of paper costs, so they set their prices "below cost" to be on the safe side.

E D I T O R I A L

This is open season for overproduction "snipers" who have no selling prices but "snipe" under the prices of any and all competitors. They are generous contributors to overproduction and think themselves foxy price cutters. They actively prolong the epidemic and howl loudly over the deficit-producing results of their own operations.

This is also the heyday of the willful, lawless overproducer who has plenty of financial backing and boasts that "We can afford to lose money in order to clean up our competition." They indulge deliberately in overproduction and price-cutting and publish their deficits without a blush.

And then there is the ignorant overproducer who says "Our statistics show no overproduction." He insists on running his plants 100 per cent in face of a 65 per cent demand, insists that the other producers in his line yield their tonnages to him, and resorts to the "write your own ticket" sales method.

Of course, this picture is all wrong.

Everybody knows it is wrong.

And yet, on September first, there is no evident attempt being made to mobilize the epidemic fighting forces to control these deadly conditions.

When will they get together and end the overproduction, price-cutting, profitless disease?

When the deficits become so large and the dead dollars so stupendous that the imminence of hopeless bankruptcy scares the directors and stockholders, who are behind the bullheaded overproduction mismanagements of industry, into remedial action.

Then we shall see a transformation.

It will be along these lines.

First—No more building of new mills.

Second—Existing mills will curtail operations to orders in hand.

Third—Prices will automatically advance to a fair profit level consistent with demand.

That could be the condition to-day.

That's the pity of the whole industrial tragedy.

For be it recorded and ever remembered that **overproduction is a condition under the control of the producing mills only.**

When producing units of an industry get together and stop overproduction, price-cutting will cease and deficits be changed to profits.

Sooner or later the overproduction epidemic will be controlled. It must be controlled because one sure conclusion to the whole matter is becoming more manifest daily and that is, that the final product of overproduction is the overproduction of deficits.

Modernize—Rehabilitate—Get Ready

THERE is an expression, used many years ago, which told us in times of peace we should prepare for war. War is being ostracized by the nations during these modern times, but this same thought can be expressed to have a meaning which is important at the present time.

In other words, during depressions such as that which seems to be in existence at the present time, we should prepare for production. This advice has been proven by the experience of manufacturers during many other periods of depression.

The average executive and board of directors, as soon as business becomes slack, order that expenditures cease wherever possible and when business picks up again (as it naturally will) and orders begin to come in, there is confusion for some time on account of putting the plant into proper shape to turn out the orders that have been received.

The old argument is often used that it is not good for a company to spend money when money is not being made. This is correct as a general rule, but if the average paper mill management would look over its plant, many places would be found where considerable work could be done to rehabilitate, modernize the plant, and put in new equipment which would make tremendous savings when orders are received.

The average business, such as a paper manufacturing plant, is able to borrow all of the money that is necessary, and at a much lower rate now than when conditions are in better shape. The work can be done without interrupting production to any great exent, which would be the result if done with the plant running at full speed. Labor is more plentiful and material can be secured more easily than under ordinary circumstances.

That conditions will improve in the very near future we all know, as this has always been the case when similar slack times have occurred, and if the average plant should be modernized at the present time, it could turn out the largest possible tonnage at the lowest possible cost when orders come. The low cost of this work if done at the present time would make a tremendous saving for the company.

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E D I T O R I A L

The writer recently visited several well-known paper mills and was surprised to find the conditions that existed in practically all departments of these mills. In a beater room, the beaters were all in bad shape; the bars were worn down, some of them being badly bent, and it was taking much more power than necessary to do the same amount of refining.

One of these days, and the time is not far away, these organizations will have all the orders they want. They will not be able to fill them as fast as they should be filled. This is going to mean less profit to them than would be the case if these plants were put in proper shape at the present time when it is much easier to do than if the work should be delayed.

Paper machines in many cases can be overhauled with considerable profit. All of the equipment in the mills should be inspected and repaired or replaced. We believe this is the ideal time. The machinery manufacturers are in shape to rebuild equipment or furnish repairs in much less time than under ordinary circumstances, and it is only natural that it will cost considerably less for certain classes of work now than it would when these manufacturers are rushed with orders in the fall.

Plants and equipment should be modernized, rehabilitated, and the work should be done **now.**

Rayon Rags in Papermaking

IT has been feared that the presence of rayon or artificial silk in textile materials might endanger the quality of rag papers made from such mixtures of fibers. Our Berlin contemporary, the **Papier-Zeitung,** in a comment on some tests made at the laboratory of the Paper Section of the U. S. Bureau of Standards, quoted a report by the Bureau in which it was set forth that an admixture of rayon textiles with linen or cotton rags had an adverse effect on the quality of the finished paper.

Dr. Jessie E. Minor, chemist of the Rag Content Paper Manufacturers, had her attention called to the article and took steps promptly to discount what was said concerning the supposedly deleterious effect of rayon rags as raw material in rag paper manufacture. In a communication to the editor of the **Papier-Zeitung,** which was published in the issue of August 23, 1930, Miss Minor called attention to the fact that the experiments or tests made at the laboratory of the Bureau of Standards did not reproduce mill conditions. She pointed out that one pound samples of pure rayon material were cooked in alkali in small laboratory equipment, then carefully washed by hand and made into hand sheets on a small hand mold. It was found that this process entailed a loss of as high as 12 per cent of fiber, the remainder consisting of tiny fragments too short to be of any papermaking value.

In mill practice, as is well known, rags are cooked in 6,000 lb. lots, then washed in Hollander-type washers with continuous agitation and running water through a coarse screen for six to eight hours during which time all such short fibers are washed away. Any which might escape this process are eliminated in the subsequent washing after bleaching, or when the very dilute suspension is drained over the machine wires. Everyone who knows how difficult it is to retain mineral fillers in rag paper will appreciate the impossibility of retaining minute rayon fragments throughout the entire mill process.

The point is made by the chemist of the Rag Content Paper Manufacturers that if for some reason any manufacturer should adopt the method of the Bureau of Standards laboratory and make a paper containing 30 or 70 per cent of rayon, it would be found no doubt that the finished paper possessed less strength than a similar paper made from all cotton rag fibers but no evidence has been adduced to prove that such a paper would be impermanent.

Rayon fibers are fully as resistant to light, air, and such impurities as attack paper in dry storage as are other papermaking fibers. Therefore, the implication that rag papers of the future should be looked upon with suspicion because of the rayon in textile rags, appears to have no foundation in fact.

Keep Posted on Equipment

"BUILDERS and doers in the world of business, industry, and commerce are never done with education, never too proud to admit that ideas are scarce and that when a good one comes along it will be given a chance to prove itself," says William L. Ninabuck, of the International Harvester Co. "This is an interlocking world. It is a rare man who can continue to be a success by himself alone, and who can afford to ignore what other men are thinking and doing in competitive fields. The wise men are keeping posted on modern methods and equipment."

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The Paper Trade of Venezuela

By WILBUR T. GRACEY

This is the fourth of a series of articles specially prepared for us by Mr. Gracey, who was for over twenty years an American Consul in Latin America and other parts of the world. Mr. Gracey speaks Spanish and several other languages, and during his term as consul was a prolific contributor to "Commerce Reports," has done much constructive work for the Government and American manufacturers and been successful in placing many firms in contact with trade opportunities abroad.

VENEZUELA, lying, as it does, at the northern extremity of the Southern Continent, is nearer to the United States than any other part of South America, and is a natural outlet for our products.

That this is so is shown by the fact that nearly half of the paper and paper products imported there come from the United States, though in most of the other South American countries Europe supplies larger amounts than we do.

With an area of nearly 400,000 square miles, Venezuela supports a population of over 3,000,000, of which about 550,000 are Indians, 200,000 negroes and the balance mestizos and whites.

In recent years considerable interest has been taken in public education—which is under the control of the government—which comprises primary, secondary, normal, higher and special branches. The fact that education is compulsory between the ages of 7 and 21, coupled with the extension of education throughout the entire country, and the fact that in the higher grades in addition to the Spanish language and literature, French, English, elementary Latin and Greek are taught, naturally increases the interest in reading, and as a consequence the sale of newspapers, magazines and books.

Venezuela is primarily an agricultural country, though there is considerable stock raising and mining as well. The principal products which feature in the export trade are coffee, cacao, petroleum, balata, hides and skins, sugar, gold, tobacco, asphalt, cattle, maize and heron plumes.

The country geographically forms four distinct zones, the mountain section in the north; the coastal plain, including the territory around lake Maracaibo; the plains known as llanos, extending across the country from east to west and south along the Orinoco river, and the elevated region south and each of the Orinoco. While the latter two sections cover nearly 80 per cent of the country, they are sparsely settled and parts are entirely unexplored. The coastal and lake regions are tropical; the mountain climate varies, naturally, with the elevation, and in parts, as at Caracas, is very agreeable. The llanos and Guayana highlands have a semi-tropical climate with much rainfall.

Paper Trade Center

The paper trade of Venezuela centers in the capital city, Caracas, which lies in a fertile mountain valley 3,000 feet above sea level. It is reached by rail from La Guaira—the principal seaport of the republic—and is 22 miles from that place. The railway winds up the mountain and immense expenditure was necessary in building it—said to be approximately $200,000 a mile. A modern motor highway parallels the rail.

The per-capita imports of Venezuela are high as compared with other Latin American countries, being $22.95—only exceeded in South America by the figures for the Argentine, Uruguay, and Chile. The per-capita importations from the United States are $12.73—Argentine and Uruguay being the only countries which exceed this figure.

Practically all the paper consumed in Venezuela comes from abroad—except small quantities of wrapping paper which is manufactured in factories at Caracas and Maracay.

The annual importation of paper and paper products is valued at approximately $700,000 of which we supply more than half. According to the latest figures published by the Venezuelan Government the imports were as follows:

	1927 Metric Tons	Value	1928 Metric Tons	Value
Cigarette paper, from Spain	185	$ 99,700	195	$103,052
Newsprint	264	20,679	310	26,774
All others		611,960		565,089
		732,339		694,915
Of newsprint				
We supplied in 1927	54	5,972	137	14,178
and Germany	110	8,657	115	8,367
All others,				
United States		308,941		280,262
Germany		143,505		120,980
According to our government statistics United States exports were:				
Printing paper		$88,948		$94,962
Other paper manufacturies		257,053		248,889

Kinds Imported

Newsprint is, of course, the leading paper product imported, but it is almost impossible to secure exact data regarding this. The figures compiled by the Venezuelan Government show imports of 264 metric tons in 1927 and 310 tons in 1928, but owing to the peculiar method of listing imports these figures do not give the actual amounts brought in.

The local newspapers—which use most of the newsprint—are allowed to bring this in free of import duty when for their own use, and it is only this newsprint that appears in the statistics. Other newsprint—imported by other than newspaper publishers—is not specially classified and appears under the heading of "papers not listed elsewhere." The importers usually estimate that the bulk of the paper so listed, consists of newsprint.

Of the newsprint imported by newspaper publishers direct, the largest part comes from Germany, though a considerable amount of Swedish paper enters the country from the United States appearing as a United States product. Some small shipments also go direct from Scandinavian countries, and from the Netherlands and England.

One thousand pound rolls, 70 inches wide, is the kind imported by the larger newspaper publishers, while the printers of smaller periodicals use sheets 26 x 28 inches.

The demand for other classes of printing paper is not heavy, as few books or magazines are published in Venezuela. Uncoated book paper is imported from the United States, and we also supply the better grades of coated and cover papers; Belgium, Germany and the Netherlands sending the cheaper grades.

Wrapping paper is manufactured locally by the mills at Caracas and Maracay previously mentioned, and owing to the cheap quality made, and the protective tariff, our wrapping paper is generally unable to meet the competition.

Some kraft paper is imported, and there is a growing demand for greaseproof and waxed papers, which are being used for wrapping confectionery and food products. They are not used to the same extent as in this country, but the call for them is growing more insistent and the sales are increasing with surprising rapidity.

Cheap grades of writing paper are most in demand, and in this class of goods European firms compete successfully against our products. In the higher grade goods—bonds, linen ledger, bristol, etc.—we are able to meet the European competition, both in quality and price.

The envelope called for—as in most Latin American countries—is the large, lined baronial type, imported generally from Europe. Most of the cheaper quality envelopes are locally manufactured, which is also the case with cheap lines of papeteries.

Paper bags are not imported in large quantities, the local factories supplying the demand, but bags for sack linings made of corrugated paper, and bags for packing coffee, and for use in dry goods stores, are imported in small quantities.

The importation of cigarette paper is second in quantity to newsprint, as there are a number of cigarette factories in the country. Approximately a billion and a half cigarettes are manufactured annually. They are made under a government monopoly, and the paper, imported from Europe, is specially manufactured and bears a watermark which acts as a revenue stamp. It comes in rolls of 3,280 feet, 1¼ inches wide.

American-made paper towels and napkins find a ready market in Venezuela, and we supply practically all that are imported. Statistics are not separately classified, but people in the trade estimate the annual importation to be about 60,000 pounds.

There is little call for wallpaper as the climate and building construction is not suitable to its use. Some of the more modern houses, however, are using it, and the importation though small, approximates $10,000 to $15,000 annually.

There is no large call for either box or binder boards, and the imports are only about 600 to 700 tons per annum. The United States supplies most of the duplex and container boards, while Germany exports coated boxboards and the Netherlands strawboard.

Building, in Venezuela, being of the usual South American type—brick, adobe, tile, etc.—does not lend itself to the use of wallboards and building

papers, so there has been no general need for these products.

They are imported to a small extent from the United States and used as interior walls in place of lumber, especially in office buildings, and some of the oil companies have found them satisfactory for temporary offices and quarters for their men. The exports of these products from the United States—while still small in quantity—is growing and there seems to be a possibility of a steady increase if some means can be found to prevent destruction by white ant pests.

Other miscellaneous products which find a good—but restricted—market are blank books, letterpress books (used by the merchants, owing to commercial laws which make the keeping of permanent bound records a necessity), serpentines and confetti—for use at dances, fairs, carnivals, etc.—filing folders, index cards, gilt paper, music paper, blotters and blank cards.

How Purchased

As before mentioned, most of the newspaper publishers buy their supplies of printing paper direct. As a consequence, manufacturers of this class of product may secure business through their traveling representatives. Competition is keen, and the manufacturer who has an agent on the spot has an added advantage.

There are a considerable number of large importing houses in Venezuela who handle different kinds of products, paper being one of them, also paper is purchased through commission agents located both in Venezuela and in American cities.

While Caracas is the center of the paper trade, and probably handles three-quarters of the amount imported in Venezuela, there is a live business also at Maracaibo and at Ciudad Bolivar. As these places are not closely in touch with Caracas, it is usual for American manufacturers to arrange for distribution and sale in each of these places.

Quotations and Credits

Generally, quotations for goods for Venezuela are made f.o.b. American port, or c.i.f. Venezuela port—usually La Guiara. Where goods are quoted c.i.f., it should be made clear that special port or pier charges, and consular fees are not included.

Credits, as in most other South American countries, run 60 to 90 days, with the Germans—and sometimes the British—extending terms of 120 days or longer. Discounting of bills is, however, a common custom in Venezuela, and generally speaking, the merchants are very up-to-date in business methods and inclined to take advantage of every means of reducing their costs commensurate with legitimate business practices.

Follow the Buyers Instructions

As a general rule when ordering, Venezuelan merchants will give exact instructions as to how documents should be prepared, methods of packing, addressing, etc. In fact, these matters are of such great importance in Latin American countries, that they are almost always sent with the order, and should be closely followed by the exporter, as heavy fines, and possibly confiscation of the goods may result from even slight errors in weights or description of goods.

Unless a manufacturer is willing to follow instructions to the letter he will find export trade as it relates to Latin America, both difficult and dangerous.

It is of the utmost importance that the buyers instructions be followed exactly. He has no desire to make these onerous or complicated, and when he asks for exact details to be given in documents, and sends careful instructions as to packing, serious losses may result if these are not complied with.

If no instructions are given, regarding packing and documentation, the manufacturer will do well to consult some authoritative guide and not go to work blindly. Packing information can be obtained from the Bureau of Foreign and Domestic Commerce, and their booklet "Packing for Export" should be in every exporters library. Excellent information is also given in the Exporters Encyclopedia.

Carefully consult the Venezuelan tariff before shipping goods and see that your goods are declared in accordance therewith. Packing goods of different customs classifications in the same package may force your customer to pay import duty on the whole package at the rate of duty apportioned to a single item therein. In any event a surtax of 15 per cent will be charged for a "mixed package."

Exact weights—by metric system—must be shown in bills of lading, on invoices, etc. Sometimes, in Latin America, several weights must be shown such as gross, net, legal and tare.

In some Latin American countries all marks must be stenciled on the packages, and goods will not be allowed entry if merely brush marked. Almost always packages must show their net and gross weight. Where there are a large number of packages, consecutive numbering is desirable and sometimes required. Numbered markings of this kind are also valuable where parts of machines are shipped in different packages.

Use the best material obtainable for your packing cases. Remember that packages in these countries will have heavy handling, must pass through varying climates, will be exposed to rain and hot sun, as well as tropic dampness. Strap them with iron bands if possible, and when the contents is particularly valuable, bind the packages with wire and seal with lead seals to prevent pilfering. Don't use second hand cases, and do not advertise on the case what it contains. Use screws to fasten lids when practicable.

Zinc or tin lined cases are advisable for all goods

for the tropics, especially if valuable. Have the lids soldered, to give perfect protection, and the importer will usually be glad to pay the extra charges necessary. He will be able to sell the tin or zinc after it has been used.

It is wise when shipping to Latin America, to limit the size of your cases to 34x24 inches as a maximum, or smaller if transportation is to be by mule back. Small cases are usually preferable, as much of the moving has to be done by hand rather than by machinery.

As in many Latin American countries tariffs are fixed on weights, packing must be used which will minimize these charges, but do not err on the other side and have the cases too flimsy. Interior wrappings become an important item to be considered when tariffs are based on weight, and if your customer has not given instructions in this regard a detailed study of the conditions should be undertaken before shipment is made.

The Germans are strongly intrenched in the paper trade—as in other businesses—in Venezuela. They were the first to settle in Caracas in large numbers to reside and do business there. Many of them intermarried with the Venezuelans and their competition is strong and active. There are about 500 British and approximately the same number of Spaniards and Italians in Venezuela, with smaller numbers of French, Moroccans, Syrians, etc. In recent years, our citizens have also settled in Venezuela, mostly connected with the oil industry.

As a general rule, commercial travelers en route to South America make Caracas one of their principal "ports of call." The government charges a license fee to such commercial travelers, but their samples—if of no commercial value—are admitted free of duty, and other samples can be entered for a period of six months under bond.

The economic situation in Venezuela is satisfactory, business is active, imports are increasing annually, and the people of this country are capable, alive, and energetic. Our trade with Venezuela is growing, but is capable of larger growth if properly investigated and handled.

Exporters requiring specific information regarding Venezuelan laws and regulations, tariffs, etc., can obtain it from the Bureau of Foreign & Domestic Commerce, the Pan American Union at Washington, or through the Venezuelan Consuls who are located at New York, New Orleans, San Francisco, Philadelphia, St. Louis, Mobile, Beaumont (Tex.), Chicago, Los Angeles, Seattle, Atlanta, Houston, Fort Worth, Galveston, Baltimore, Gulfport (Miss.), Norfolk, and Newport News.

The Pan American Union's booklets (5c each), "American Nation series, No. 21" on "Venezuela," and "No. 21.A," on "Caracas," contain much valuable information regarding this country and its capital.

The Specialty Boxboard Mill

Part II—Engine or Turbine Room

By F. E. CATON

IN my article published in the March, 1930 issue of THE PAPER INDUSTRY we visited a modern boiler room and found some decided changes over those used in the old boiler plant. We shall now visit the engine or turbine room and see what this department has to offer in the way of improvements.

Looking into the mill that was built prior to 1915, we find here that the engine room contains the beater room engine, machine constant speed engine, jordan engine and machine variable speed engine consuming large floor space with belts connected. Next visiting the more modern mill which is 25 to 50 per cent electrified, we may find a corliss or uniflow engine direct connected to a generator supplying power for machine constant speed, jordans, screens and stock pumps and note that the mill engineers are gradually working toward motor drives and direct connected, thereby eliminating belts and counter shafts.

We now enter the 100 per cent electrified mill and find a corliss or uniflow engine direct connected to the generator or steam turbine and generator unit, which is optional with the builder of the mill. Some engineers seem to lean toward the steam turbine and we have noticed some very efficient installations with this type of unit.

In regard to the steam turbine, it might be stated that considerable study, both on the part of the turbine manufacturers and the paper industry, has been given the problem of the proper selection of power equipment for the paper mill. Any equipment which is used must supply the electrical energy as well as the process steam. In the simplest type of installation, the process steam is furnished direct from the boilers, while the electrical energy is furnished by suitable power generating equipment. While this type of installation is reliable and easy to operate, it does not take advantage of all the possibilities as to economy of the modern power plant equipment. Unfortunately, while there is a definite relationship between the quantity of electrical energy and the quantity of process steam used, this relationship may vary over such a wide range as to prevent an easy solution of the power steam equipment problem. When both the electrical energy and the process steam are supplied by a single type of equipment, this equipment must be capable of maintaining the power frequencies as well as the process steam pressure. Ordinarily the electrical load in a paper mill is approximately constant while the process steam load varies over a wide range. The equipment selected should be able to meet these requirements satisfactorily.

Several types of turbine equipment may be used in the paper mill power plant. If the process steam

is furnished from a separate source, such as directly from the boilers, the turbine equipment can be a standard condensing unit.

Non-condensing units have been used to a certain extent to furnish the electrical power and the process steam, the unit exhausting at a pressure suitable for use in the paper machine. This unit, however, seldom fits satisfactorily when used alone, since the relationship between the electrical energy and the process steam demands are not sufficiently constant. Recently, the condensing bleeder unit has become common equipment for the paper mill power plant. This type of turbine can furnish the process steam at approximately a constant pressure and at the same time can furnish the electrical energy. The variations in the relationship between the electrical energy and process steam demands are taken care of by the valve gear on the unit, varying the amount of steam which is passed through the unit to the condenser. There have been some installations of non-condensing bleeders in paper mill power plants and where this type of equipment can be used, the overall efficiency of the power plant is very high, since all of the steam used in generating electrical energy is also used as process steam. This type of equipment can only be used, however, where there is essentially a fairly constant relationship between the process steam demands and the electrical energy demands, and must be supplied with steam at a relatively high pressure in order to bleed at a pressure of 100 to 150 pounds gauge and exhaust at a pressure from 5 to 40 pounds gauge.

Any power plant equipment used in connection with the paper industry must meet certain definite requirements. It must be very reliable due to the twenty-four hour operating schedule generally used. Ordinarily the carrying of stand-by equipment or stand-by connections to power lines is not justified in a plant of this type. This in turn means that the equipment used must have a very low outage factor or loss in production will be so great as to wipe out any economies that are effected by the equipment. Any equipment that is used should have a reasonably high efficiency since an appreciable part of the paper cost is represented by power and process steam cost. The equipment must also be easy to operate. The type of operators generally found in the paper mill power plants makes the use of highly complicated power equipment inadvisable. Both the speed governor and the pressure regulators on such bleeder machines as may be used should be capable of functioning automatically, that is, without any attention from the operators. Finally since it is inadvisable to operate any turbine over long periods of time without inspection, the turbine equipment selected should be accessible. Inaccessibility means longer outage for necessary repairs and inspections which necessarily means greater loss of production.

The use of bleeder type turbines in paper mill power plants has shown that they have a number of disadvantages, most of which can be overcome by proper understanding of the limitations of the bleeder unit. Many times the inherent flexibility and efficiency of the standard bleeder unit has not been realized because the proportioning of the steam capacities did not best fit the problem in hand. This, of course, could have been overcome by a more thoroughly executed study of the electrical and process steam demands. Many turbine operators in paper mill power plants have found that the bleeder machines are difficult to operate, being sensitive to both electrical or steam load changes and not maintaining the frequency and the process steam pressure. Some of this is due to the operators not being entirely familiar with the operation of the bleeder type units. There are, however, a number of bleeder units which have been used in paper mill power plants which have not been suitable for the severe operating conditions found therein. Bleeder units can be built to automatically maintain the frequency and the bleeding pressure and not be particularly sensitive to sudden load changes. Many of the bleeder units used in this type of service have not had sufficient stress given to accessibility in their design. As already pointed out, inaccessibility penalizes the plant, due to greater outage and loss of production.

In the turbine room described, we should find a master electrical control board that includes the necessary switches and instruments for the proper control of the electrical energy to each department. Another panel should include electric operated fluid meters showing: (a) high pressure steam to main header; (b) live steam to paper machine; (c) high pressure steam to turbine; (d) exhaust steam from turbine; (e) low pressure steam to feed water heater; (f) feed water pump supply, and (k) clear water for plant.

The above is a brief outline of the power end that we find in some of the mills and a comparison between the old individual engine drives and the turbine with a 100 per cent electrified mill. There has been no attempt to give any technical data in this article, as Power is a subject that would require a complete treatise in itself.

While we have mentioned the old mill of 1910 or 1915 not being up-to-date on the power end, we find that in several cases such condition does not exist, as some are producing power as economical as the modern mill. The answer for this condition is that they have kept in step with modern methods and worked toward a well balanced plant. We cannot place all of the blame on the chief engineer for a high power cost, as the papermaker can give a lot of assistance in helping to reduce the steam consumption. I have seen when a change of tours in the paper mill has reduced the steam demand from 10 to 15 per cent on the same grade of production.

War Like Tolls—Peace Time Occupation

Safety from Human and Financial Points of View

By MARIN PHILLIPS
Electrical Superintendent, International Paper Company, Niagara Falls, N. Y.

WHY are we interested in safety? There are two answers to this question: first, the human side of it, brought about by the first law of nature, "Self-preservation"; second, the financial side of it.

The human side of the question. There are 25,000 accidental deaths in this country yearly, charged to industry alone, and in addition to this, there are 3,000,000 more workers who are injured seriously enough to require a lay off from work.

The financial side of the question. This is the age of cost cutting. Economy is now the watchword of industry.

Our country's accident expense, according to insurance figures, amounts to $100,000,000 a year. Therefore, every accident prevented is a plug in this national expense leak, chargeable to a destructive, tearing down enterprise, rather than a constructive building up enterprise, that we expect to see from such an enormous outlay of money. And the sad part of it is, that its consuming flames are being fired by human fuel.

So, we see, the fighting of accidents is a paying proposition from the financial side of it alone, saying nothing of the human side of it, of which there is no dollar and cent value that can be compared with human misfortune and heartaches.

We have said that the first law of nature is self-preservation. Now this is exactly what it meant at the beginning of man's reign on earth—every man for himself in time of danger. But today, circumstances—the laws of society and the duty of one to another—modify this law to include the preservation of our neighbor's life and our fellow workman's, along with our own.

The goal set for us today is "Universal Safety"—safety for all, and there is only one way to reach it. That is, self-preservation must be extended to include all others whom we are capable of helping.

There is only one tested recipe for a lasting no-accident record, and that is—every man a safety inspector, supervisor of himself and his buddies. When we arrive at this stage of the game, accidents will be as rare and far between as no-accident records are today.

The most effective weapon that can be brought into play today against accidents, is methods whereby the interest of workmen will be aroused to the cause of safety.

Man, when at home, is continually thinking of every member of the family's safety, and he thinks of the safety of a visitor. He would feel terribly bad if one should trip and fall on the rug. But most of us shut this attitude up in the house when we close the door to go to work.

We arrive at the plant, which is only one big industrial family, with which some of us spend a third of our time. No, we do not want to see Bill hurt or Charlie hurt, and yet we will eat an orange or banana, and throw the peeling on the floor for them to slide or fall on; or leave a truck handle across a walkway for them to trip on. No family spirit or comradeship prevails. We are not yet ready to recognize the plant as one big industrial family.

A plant is just as safe as its employees make it. Show me a plant whose employees are daily turning in reports on unsafe conditions, making suggestions for improvement on plant safety, and I will show you a plant with a good safety record.

These men have safety suggestions and ideas, if we can get them, but how are we going to do it? The best way is to create a feeling of self-confidence—a feeling that they have a part in the plant's safety program. A safety committee that alternates from one month to the next is a very good means of accomplishing this end. It is a continuous training program.

A special effort should be made to induce oilers, motor tenders and similar workmen, whose duties carry them into every nook and corner of the mill, to turn in safety suggestions.

The Selection of Equipment

The first requisite in the selection and installation of new equipment should be the safety of the workmen who have to operate it. The price is secondary.

The plant guarded by modern equipment and accident prevention equipment is insured against the lost time of workmen, uninterrupted production and less expense for workman's compensation.

The empty lamp socket or none at all invite low efficiency from the workmen, lost time accidents and in some cases, theft. The insurance reports tell us that not less than 18 per cent of all accidents are chargeable to inefficient lighting.

We have to be continually on the alert for new and more effective ways to present safety. Every one is striving for a positive way to drive home their safety teachings. Safety appeals register more forceably when interestingly presented.

In order to succeed in any line of endeavor, we have to have some set goal or ideal to work towards. But before we can reach any goal, we have to get started, and the slower we are getting started, the longer it is going to take to reach the goal. If we were running a race on an icy field, we would lose valuable time getting started. So we can see by this, that if we had a solid background to push off from, we would get under way much faster.

Safety is just one continual race against hazards. If we beat them, we escape the consequences; while if they beat us, we suffer. To date, hazards of industry seem to nearly always beat us to the no-accident goal. They have a firmer footing to push off from than we have.

No man will willfully injure himself or any one else. This thought will supply us with a firm footing to push off from, in the race against accidents. Then why does man get hurt? Because he is not well enough acquainted with all hazards to shun them, or he has not put safety on a level with his other duties.

It is our duty as foremen and leaders to correct this condition. Man is ignorant of many things until they are brought to his attention. We can eliminate many accidents by a process of familiarizing every one with the many hazards daily encountered.

Every foreman should have a list of the hazards pertaining to his department. The best way to acquire this is to start a note book, and every time a new hazard is discovered or presents itself, it can be entered in the book. Then after a while they can be typed into an instructive safety notice. This will be very valuable when taking on a new man, in that everything we want to show or tell him will be at our command.

As an example of how mine works out: No one is allowed to change burned out lamps in any high-voltage compartment, yard lights or train shed, etc., unless I am present. If I tried to instruct a new man from memory on a long list of hazards, I would be sure to omit some of them.

Making Use of What We Read

The daily papers and magazines furnish us with a valuable supply of information for use in combatting accidents. When we read of an accident, we should take inventory of our own similar conditions, to see if the same misfortune could befall us.

I have found that posting a little safety talk now and then is a great help. It is about all of the safety reading that the average workman will get.

When I read of an accident, I think of it when performing a similar task. From this, I believe that the posting of how accidents happen, especially the unusual ones, would do some good. The first aid daily report would furnish this information. As an added incentive to safety, consider a man's safety record along with his skill as a workman, when being considered for promotion.

Safety Suggestions

Have sufficient exits in all transformers and switch rooms to prevent the possibility of any one being trapped or cut off from escape in case of an electrical fire.

No burned out lamps to be changed in any high-voltage compartment, unless the electrical superintendent is present.

No series yard lights to be changed during the night.

The electric welder or any other motor driven appliance offers a hazard, due to the fact that it usually has to be connected up alive. I suggest that the welder or operator be not allowed to do this, and that two electricians be always together when performing such work.

A ground wire should be attached to such motor driven machines.

A small fuse box should be connected in the portable cable, as near the point of connection as possible, to guard against the possibility of connecting up a short-circuited cable, due to wear, as has been the case.

The electrical superintendent or his assistant to be present when any live electrical work is being done, as an added precaution.

That the name of the drive be stenciled on the line switch and control equipment, as well as the feeder number. This to speed up the time consumed in opening the switch or stopping the machinery, in case of an emergency, by not having to trace out the right one.

Install all starting equipment in view of the machine that it drives, whenever possible.

No piece of equipment to be started from more than one point.

Emergency stop buttons to be installed in places where accidents are likely to occur.

Woodplaners, rip, cut-off saws, etc., to be used only by an experienced wood worker. The safety guards on such machines to be so constructed that they will automatically cover the knife or saw when the board is through.

When a double-throw switch is used ahead of a compensator for the purpose of reversing the motor, a sign to be stenciled on the switch, "Trip Starter before Opening Switch."

Elevators to be so equipped that they cannot be started from more than one point at a time.

Discard all metal danger signs.

Inspect all pressure tanks at regular intervals,

especially compressed air tanks. This inspection to be made by the boiler inspector, if possible.

Motor pulleys to have the rim flush with the hub on one end, to prevent the pulley overlapping the bearing, making it difficult and hazardous to inspect or oil the bearing.

The adjusting screw in the motor base, for tightening the belt, to be on the opposite side of the motor from the line wires. This to remove the hazard connected with using a wrench around the wiring.

All motor starting equipment to be operated by the electrical department, except when push button control is in use.

That all truck handles be so constructed that they will automatically assume a vertical position when turned loose, or a catch be provided on the end of the truck body to engage the handle, to prevent its lying across the floor.

That all extension cords used in boilers, tanks and the like, be provided with a rubber protection socket over the socket end splice.

That belts in aisles or other locations, where workmen are frequently near, be provided with a steel plate guard in front of the belt's line of travel, to hold it in case of a rip or break.

That stairs and walkways, around the wet end of machines, be equipped with non-slip treads.

The exposed parts of the machine bed plates also offer a slipper hazard, especially when oily.

Lubrication of Pulp and Paper Mill Equipment

By H. E. STAFFORD
Electrical Engineer, Port Arthur, Ontario, Canada

PROBABLY there is no industry where the diversity of lubrication is greater than in a pulp and paper mill. In this industry, practically every type of application is to be found, and the equipment is forced to operate under conditions of extreme high and low temperatures, exposure to gases, moisture, high bearing pressures, etc., calling for various methods of lubrication and various grades of lubricant, and if the equipment is to give the expectancy of useful service, and the lubrication costs kept at an economical plane, lubrication must be handled scientifically.

Grades of Lubricant

Practically all of the oils used around a pulp and paper mill are pure mineral, one or two grades, only, having vegetable content in their make-up. Of the greases used, these consist of various compounds of mineral, vegetable, animal and chemical content, and should be selected by their physical properties to meet the requirements of the application.

Oils should be selected on their characteristics as regards viscosity, flash point, bearing pressure, cold test, etc. The viscosity of the oil should conform as closely as possible to the figures shown in the accompanying table. Viscosity is determined by the time in seconds required for a certain quantity of oil to pass through an orifice at a standard temperature, the method of determination being by means of the Saybolt viscosimeter. A good lubricant should have maximum adhesion to the surfaces lubricated and minimum cohesion between the oil particles; should not readily oxidize with changing temperature and under varying bearing pressures, and be free from acid and other impurities. The flash point should be above 149 degrees C., 300 degrees Fahr., and evaporation should be under five per cent.

Greases may be classified as lime base, soda base and special. Lime base grease should be used whereever moisture is prevalent. This grease (usually called cup grease) is composed of either lard oil, horse fat or mutton tallow combined with cottonseed or rape-seed oil, and pure mineral oil, with the addition of small quantities of stearic and oleic acids. Cup greases have a wide application and care should be used in the grade selected for a given application, since there are several grades. Where used on high speed applications, the mineral oil make-up should show a high viscosity test.

In soda base greases, the general make-up is the same as the lime base, with the exception that caustic soda is substituted for hydrated lime. Since soda is soluble in water, these greases should not be used on applications where water is prevalent. Soda base greases differ in other respects from lime base greases, in that they are firmer, and from their nature are called sponge or fiber greases. They are very applicable to the lubrication of ball-bearings.

Of the special greases, wool-yarn grease is the only type adapted to pulp and paper applications. Wool-yarn grease has a soda base, is much softer than sponge grease, and has the addition of wool waste to the extent of approximately ten per cent, the wool waste adding to the cohesive properties.

Types of Bearings

The types of bearings used on pulp and paper mill

equipment will determine to a greater or lesser extent, the economical side of lubrication. There is very little excuse for hand lubrication, since any type bearing can be economically and successfully fitted with one or more of the many types of automatic sight feed lubricators or grease cups. The most economical types of bearings from the standpoint of lubrication are the ball and roller bearings, since one charge of lubricant is often sufficient for from two months to a year, constant running, the periods of renewal depending on the speed of the shaft and the operating conditions.

Ball- and roller-bearings are more costly as regards capital expenditure than any other type, but

EQUIPMENT	APPLICATION	TYPE OF OIL	VISCOSITY *seconds at	SAYBOLT degrees temp.	TYPE OF GREASE	REMARKS
Chains		mineral	1000	100 Fahr.		
Wire rope		"	1000	100 "		
Gears, enclosed		"	800	70 "		
Conveyors	bearings	"	300 to 650	100 "		
Slasher saws	mandrels	"	200 to 500	100 "		
Drum barkers	bearings	"	300 to 650	100 "		
Knife barkers	"	"	200 to 500	100 "		
Chippers	"	"	60 to 100	210 "	soda base high melt.	
Grinders	metal bearings	"	50 to 60	210 "	lime base high melt	
"	lignum vitae bearings	water				
Chip screens	bearings	mineral	200 to 450	100 "		
Pulp screens	"	"	300 to 500	100 "		
Stock pumps	"	"	200 to 500	100 "		
Motors	"	"	40 to 60	210 "	sponge or fiber	melting point of grease determined by the location of the motor
Wet machines	"	"	700	100 "	lime base low melt	
Calciners & sulphur burners	"	"	2000 to 5000	100 "	soda base yarn grease.	
Beilmer bleachers	"	"	300 to 500	100 "		
Beaters	"	"	300 to 500	210 "		wick oilers recommended.
Refiners	"	"	300 to 500	100 "		" " "
Stock chest agitators	"	"	300 to 500	100 "		" " "
Plunger pumps	"	"	300 to 500	100 "		
" "	cylinders	min. & rape seed	500	100 "		sight feed bottle oilers recommended
Diaphragm & rotary screens	bearings	mineral	300 to 500	100 "		
Paper machine breast rolls	"	"	500 to 700	100 "	specially compounded to emulsify in water.	
" " table rolls	"	"	" "	100 "		
" " save all	"	"	" "	100 "		
" " wire guides	"	"	" "	100 "		
" " return rolls	"	"	" "	100 "		
" " return rolls	"	"	" "	100 "		
" " deckles	"	"	" "	100 "		
" " dandy rolls	"	"	" "	100 "		
" " shakers	"	"	" "	100 "		
" " couch rolls	"	"	" "	100 "		
" " press rolls	"	"	" "	100		
" " smoothing rolls	"	"	" "	100 "		
" " press felt rolls	"	"	" "	100 "		
Paper machine dryers	bearings	"	60 to 200	210 "		
" " felt dryers	steam joints	"	100	210 "	high melting point.	
" " dryer felt rolls	gears	"	1000	210 "		circulating oil system
Calenders	bearings	"	60 to 70	210 "		wick feed oil or grease cups
Reels & winders	"	"	300 to 500	210 "		circulating oil system
Super Calenders	"	"	60 to 70	210 "		
" "	gears	"	1000	210 "		wick feed oil or grease cups
Cutters	bearings	"	300 to 500	210 "		
"	gears	"	1000	100 "		circulating oil system
Turbines	bearings	"	200 to 300	100 "		mechanical lubricators
Air compressors	"	"	200 to 400	100 "		
" "	case	"	500 to 700			

* The lower range in seconds is for new and tight bearings, the higher range being for old and worn bearings..

the savings in lubricant and repairs will generally compensate for the first cost, and in most cases show large savings in the normal life of the equipment. As a result of a record kept of ball versus sleeve-bearings equipped with oil rings on ten motors of each type, five years operation show that, although the first cost of the ball-bearings was three times that of the sleeve-bearings, the cost of lubricant for the ball-bearings was 25 per cent of that for the sleeve-bearings, and the repairs and replacements to the sleeve type was two and one-half times the cost of the ball-bearing repairs and replacements. The figures further show that with capital expenditure, lubricant, repairs and replacements, and inspection labor taken into consideration, the ball-bearing costs were 10 per cent less than the sleeve type for the period mentioned.

Ball-bearings, to operate economically, must be enclosed in leak proof housings, whether grease or oil is the lubricant, since when the oil or grease cannot escape, dirt cannot enter, and the periods of renewal are farther apart. High speed ball- and roller-bearings when operating under normal temperatures require a lubricant, either oil or grease, of fairly high viscosity.

Sleeve-bearings are of several types, those which are self-lubricating from an oil reservoir being the most economical. These consist of ring-oiled, chain-oiled and collar-oiled types. If these bearings are properly fitted to overcome siphoning, they do not require much lubricant when new, but as they become worn their tendency to siphon increases.

Open type sleeve-bearings, both with and without rings, such as are usually used on line shafting, are more economically lubricated if fitted with wick or bottle oilers than by the old waste pack method, and require less attention. The open type waste filled journal does not control lubrication, as the oil mostly leaks out, but when fitted with either wick or bottle oilers, the oiling is automatic, and as soon as the shafting stops revolving, the oil likewise stops circulating.

Heavy duty bearings on certain types of equipment, where lubricated with oil-soaked waste, can often be economically lubricated by means of mechanically operated forced feed lubricators, a representative application being the main bearings of a large air compressor.

Grease-lubricated bearings are usually fitted with fittings known by various names such as Alemite, Zerke, etc. Grease is applied by means of a pressure gun, and the fitting closes securely after being charged. These fittings are superceding the older grease cups which had to be screwed down by hand from time to time. Greases with a large animal fat content should not be used with these fittings, since at high temperatures, the mineral content separates from the animal content, thus plugging the orifice with pure tallow.

Gear Lubrication

Open and enclosed gears and speed reduction units require constant lubrication if the life expectancy of the equipment is to be realized. Open gears should not be oiled, but should be treated to a tough fibrous grease having a lime base. If the gears are in a comparatively clean location free from grit and dust, the grease may be applied hot, but if in a location subject to dirt, it should be applied cold.

If possible to provide slush pans for the gear to run in, an oil having low viscosity may be used. The pan need not be any deeper than the rim of one gear, since this gear will convey the oil to others.

Enclosed gears and speed reduction units can be lubricated with a higher viscosity oil, since they run in the oil, and at least one of the units is high speed.

Worm gears wear much faster than spar and herringbone gears, and require greater attention, and are therefore not recommended for high speeds.

Chain Drive Lubrication

The tendency in pulp and paper mills is to substitute silent and roller chain where belts were formerly used, especially on applications having short centers. Chain drives should not be attempted, however, unless the chain can be properly housed and lubricated, as it is impossible to properly lubricate a chain with grease, oil alone being the only efficient medium. The base of the chain case should contain enough oil of medium viscosity to insure a constant supply to all parts of the chain.

Lubrication of Steel Cables

Steel cables for conveyors, hoisting or other purposes where passing around bull wheels and cable drums should be properly lubricated for a dual purpose: first, oil lessens the friction and wear when the strands move against each other in passing over the drum, and second, to prevent rusting of the strands. Low viscosity oil can be used, some provision being made whereby the cable passes through an oil bath in its travel. Conveyor chains last much longer when run in an oil bath.

Lubrication and Inspection

Much depends on the ability of the men responsible for the lubrication of machinery. Some oilers believe that proper lubrication consists of having the machinery dripping in oil, and while there is a probability that with this type, the bearing replacements will be light, the waste of lubricant will more than pay for the bearings renewed and the time lost in renewing.

Oilers should be taught to work by the sense of touch as well as the sense of sight whether the lubricant is applied by hand or automatically. A hot bearing is readily visible to the eye, but a warm one is not, and there is always a chance of oil stoppage where automatic lubrication is applied that

is only indicated by the bearing becoming warm.

Bearing inspection is really more important than bearing lubrication, as the oiler then knows the condition of all equipment under his care, and can notify the proper authorities when a bearing needs replacing.

Men responsible for the lubrication should be fully acquainted with the different grades of oils and greases as to their physical properties, and the status of the sometimes maligned oiler should be raised to a higher level.

Reclamation of Oil

With proper equipment, great savings in lubricant may be affected. By the use of any of the various oil separators and filter presses, oils that contain water, sludge and other impurities may be purified and made fit for further use on the same application. This applies to the oil used in gear cases, chain cases, turbines, transformers, oil circuit breakers, etc. Properly filtering the oil increases its life so that it can be used over again many times.

Oil that has been burned or otherwise affected, when properly treated, although not fit for use on the original application, may be used on other applications where either an oil of higher or lower viscosity will do.

Where oil to be reclaimed contains an excess amount of foreign matter other than sludge and water, it should be put into settling filters before being passed through centrifugal or blotting paper filters, since metal cuttings soon wear out the press pumps and centrifuges.

Lubrication Costs

The cost of lubricant exclusive of wages will vary with the type of the equipment and the product manufactured. A fair average figure per ton of finished product may run all the way from 10 cents to 25 cents per ton, the first figure representing news mill costs, the latter, bond and specialty mill costs. There are mills where the cost is as low as 5 cents per ton, but these mills are especially equipped for automatic oiling, and waste is practically eliminated.

If the cost of repairs, replacements, lost time, and lost production are added to the cost of lubricant, the lubrication costs of the average mill will be found much higher than is generally shown in the balance sheet.

From an economic standpoint, common sense lubrication means:

1—Longer equipment life,
2—Lower lubricant cost,
3—Lower repair and maintenance costs,
4—Higher production,
5—Cleaner products,
6—Lower unit costs,
7—Greater plant efficiency.

Pure Alcohol

By DR. TH. BENTZEN
Chief Chemist, Whiting Plover Paper Co.

THE research chemist must be able to test the alcohol he needs for preparing his reagents, to be sure that the alcohol he is using for such solutions does not contain even traces of formaldehyde or (what practically means the same) wood alcohol, "the poor American's drink." How should the chemist, for instance, be able to state whether formaldehyde or wood alcohol is present or not present in a sample of paper where the rosin must be extracted by alcohol, if he is not sure that the alcohol is absolutely pure? And as I have had the strange experience that even the 99 per cent alcohol which the chemist is permitted to procure by government license for laboratory use may happen to show the reaction of formaldehyde (probably due to the use of wooden barrels for storing), I regard it as absolutely necessary for the chemist to analyze the alcohol before using it and not to depend upon the dealers designating it as pure.

In the following, I shall explain in detail a reliable method of qualitative analysis, which will show even traces of formaldehyde or wood alcohol present in the ethyl alcohol in question, one which is very easy to perform.

We need for this purpose a small still, which most practically can be put together by help of an electric flask heater, a Kjeldahl Pyrex glass flask, capacity 300 cc. and a Friedrick's screw type condenser, all corks covered with pure tin foil, and as few rubber connections used as possible.

The still is furnished with 20 cc. of the alcohol to be tested, diluted with distilled water to the volume of 100 cc. To this is added about 5 grams of chromic acid. The distillation should not be carried too far, as we shall only need about 10 cc. for our tests, making use of the following methods, which if formaldehyde or wood alcohol is found to be present, will react as stated:

(1) A few drops of Nessler's reagent to a few cubic centimeters of the distillate will reduce. The Nessler's reagent can be procured from any chemical supply company.

(2) Resorcinol test: A little ("the point of a knife") resorcinol is dissolved in about 3 cc. of a strong (about 27 per cent) chemically pure sodium hydroxide solution, whereupon, about 3 cc. of the distillate is added. This mixture is then boiled for about one-half hour or longer, until the original yellow color eventually changes into cherry red, which still deepens with longer boiling.

(3) Silver mirror test: To about 3 cc. silvernitrate solution (1:10) is added drop for drop ammonium hydroxide until the originated precipitate even again dissolves. To this ammonical silver solution is then added about 3 cc. of the distillate and

the mixture is heated. Reaction: separation of metallic silver, which will stick to the wall of the test tube, forming a silver mirror.

If these reactions do not appear at all, the alcohol does neither contain formaldehyde nor wood alcohol, and it will, therefore, be serviceable for all purposes and occasions where pure ethyl alcohol is demanded.

For all other determinations of impurities, I shall refer to the chapters about alcohol in B. L. Murray's "Standards and Tests for Reagent Chemicals," and as we are not investigating the drinking quality of our alcohol, but only its qualities with respect to C. P., a method of quantitative analysis or methods for improving it would be of no interest to us, as such experiments would place us against the law, or, according to Einstein's theory, would cause the law to be on the wrong side!

Lessons in Steam Plant Practice

Lesson VI—Measuring by the B.T.U.

By J. CHARLES RYDER
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These lessons in Steam Plant Practice are being published in THE PAPER INDUSTRY by arrangement with the Champion Fibre Company, Canton, N. C. They are a part of the general educational course conducted by this company under the direction of J. Norman Spawn, educational director.

THE object of mechanical stockers is to save labor, improve combustion efficiency, and to increase developed boiler horsepower. The capacity of a boiler, as we have pointed out in a previous lesson is limited to the capacity of the furnace to deliver heat. With natural draft and a good furnace, 20 pounds of bituminous coal per hour per square foot of grate area is a good rate with a hand fired furnace. Under forced draft 70 pounds has been burned in stationary plants in test runs; while with stokers, from 40 to 110 pounds per hour per square foot of grate area can be burned economically, depending on the type of stoker and the available draft.

Stokers may be classed as overfeed (Fig. 17), or underfeed (Fig. 18). The former feeds the coal from above, while the latter feeds from below. The underfeed stokers may or may not use grates; the latter types do.

Overfeed stokers may be side inclined, like the Murphys, or sloped from front to rear like the Weitzel or Rooney, or it may be a chain grate (Fig. 19) carrying the fuel from the front to the rear, where the ash is dropped off, and the fuel is consumed during its travel through the furnace.

Rules for Progress

There are ten general rules that should govern us in our daily work, if we desire to make progress in our chosen line.

1—Do not waste anything. Remember that in so doing, you waste the money of the company that employs you, and when you do waste things you are giving them an excellent reason for not increasing your wages.

2—Keep the place and equipment clean. If you cannot keep them clean, keep them as clean as you can.

3—Keep the engines, boilers, furnaces and other apparatus in your charge in good physical condition. The better condition of your equipment, the easier your job will be.

4—Use the best materials obtainable, when possible, especially in the construction of furnaces.

5—Adopt a routine for your work, but do not be a slave to routine.

6—Keep practical records as far as possible but do not over do record keeping. Records that really tell something are the only ones necessary to keep.

7—Be as firm as you please in the enforcement of discipline, but always be fair.

8—Always be interested in your work, because your work is interesting. There is considerable more to it than just burning coal to make steam, or running an engine to make "juice."

9—Ready, study and keep up to date.

10—Always be guided by common sense.

The more you know about your job, the more interesting it will be, because every detail is packed with interest. In your work in the boiler room you are unlocking one of natures most strongly guarded storehouses, the buried coal.

You are harnessing natural energy and forcing it to carry the mill load. You are grappling with one of the greatest of the many conservation problems before our country. There is no engineering field in which you can perform such effective service and no other in which you can reap such substantial returns for patient study and honest endeavor.

B.T.U. Measurements

The B.t.u.'s we were talking about in Lesson 4 are known as the British Thermal Unit. By definition, it is the amount of heat required to raise one pound of water one degree Fahrenheit, within the range from 32 to 212 degrees.

This is not scientifically correct but is what we use in our business. While it is correct for the whole

range of 180 degrees Fahr., it takes slightly more than one B.t.u. to one degree in the lower temperatures, and slightly less than one in the higher temperatures.

The B.t.u. is an elusive thing. They slip away from a fellow while he is looking at them, and our job is to make every one do some work; "get them ganged up in the steam"; that is where they will do the most good. Let us see how we can measure the boiler and engine horsepower by the B.t.u.

One engine horsepower = 33,000 pounds moved one foot in one minute.

One boiler horsepower = 34.5 pounds of water per hour evaporated into steam from and at 212 degrees Fahr.

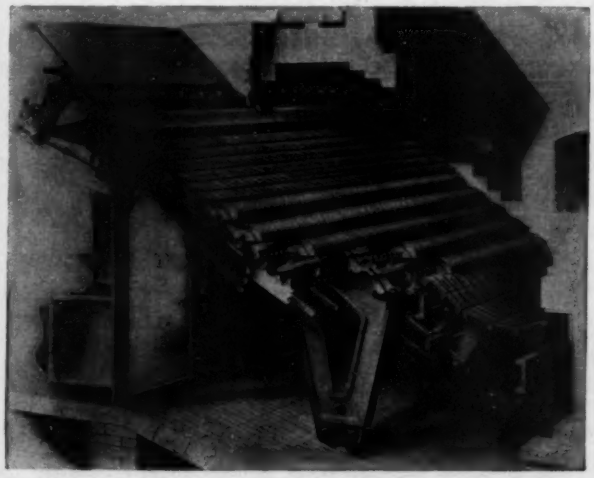
Note that engine horsepower is stated in one minute of time, and the boiler horsepower is stated one hour of time.

The first thing we have to do is bring the engine horsepower up to the hourly basis, accordingly we multiply 33,000 foot pounds by 60 minutes.

$$\begin{array}{r} 33{,}000 \\ 60 \\ \hline \end{array}$$

1,980,000 foot pounds. Now this must be divided by the mechanical equivalent of heat, which is 778 foot pounds with no time limit as above.

This 778 foot pounds was first determined about 1840 by Dr. Jule, a Frenchman. He rigged up an outfit something like a hand ice cream freezer, only

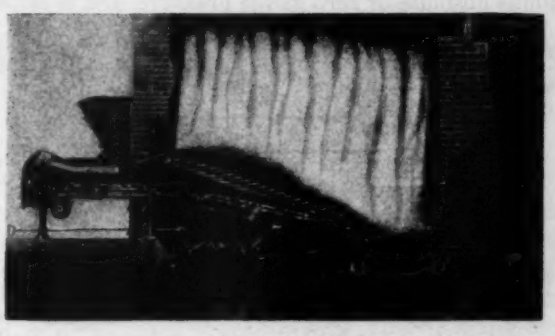


Courtesy, Westinghouse Elec. & Mfg. Co.

Fig. 17—Overfeed stoker

he extended the shaft from the paddles up high; put a spool on the shaft and wrapped a cord around the spool with the end hung loose over a pulley and fastened a weight to the end of the cord which traveled along a graduated board to measure the actual drop. This weight was allowed to fall through a certain distance, and in falling it turned the shaft with its paddles, which in turn agitated the water, thus producing a certain amount of heat. After experimenting, he found that 77.8 pounds weight dropped 10 feet raised the temperature of one pound of water one degree, then the weight times the distance dropped equaled 778 foot pounds. Figure 20 is a sketch of Dr. Jule's machine.

The figure 778 is the mechanical equivalent of heat, it means that one B.t.u. will raise 778 pounds



Courtesy, Combustion Engineering Corp.

Fig. 18—Underfeed stoker

one foot high, or one pound 778 feet high. The B.t.u. is a powerful "bird"; no wonder we want to keep a close tab on it, and make it do useful work,

Courtesy, Combustion Engineering Corp.

Fig. 19—Chain grate stoker

for every one that "gets by" without doing any work, means we are just out 778 foot pounds.

Getting back to our arithmetic, we multiplied 33,000 by 60 and got 1,980,000 which we divide by 778 giving 2,545 B.t.u. per engine horsepower per hour. The formula:

B.t.u. per engine horsepower per hour equals

$$\frac{33{,}000 \times 60}{778} = 2{,}545$$

If we know the temperature and pressure of the steam entering a turbine or engine and that of the exhaust leaving, we can figure the pounds of steam used per hour more accurately than with a flow meter or an indicator card.

One horsepower = .746 kw. or one kw. = 1.34 hp. To get the B.t.u. in a kw., multiply 2,545 by 1.34,041.

or divide 2,545 by .746; this equals 3,411 B.t.u. in a kw.

How many B.t.u.'s in a boiler horsepower?

$34.5 \times 970.4 = 33{,}478.8$ B.t.u.

This 970.4 is the number of B.t.u. it takes to convert one pound of water at 212 degrees into steam at 212 degrees Fahr. and atmospheric pressure 14.7 pounds absolute or zero gauge pressure, and is called

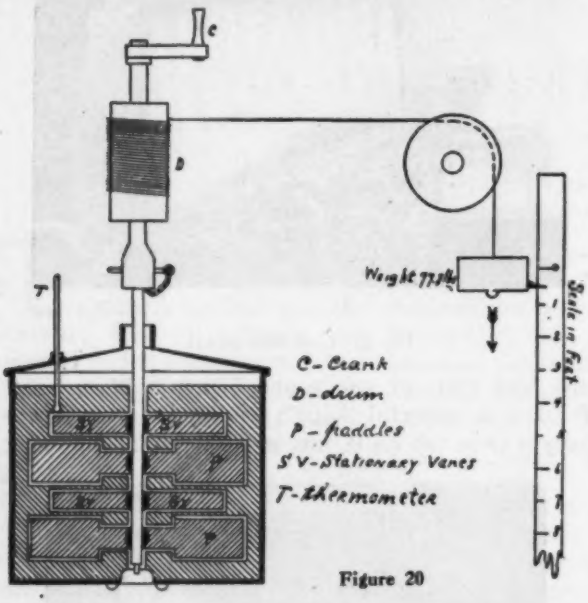


Figure 20

The latent heat of evaporation. We cannot measure this with any instruments when coming up to steam, because the heat apparently disappears in producing some change in the condition of the water without increasing its temperature, i.e., passing from the liquid to the gaseous state. Latent heat reappears in the reverse cycle, that is, when condensing the steam back to water.

Let us now consider the economizer.

Economizers

Economizers consist of a series of tubes, usually of cast iron, made in sections and so connected, that the feed water which is admitted at one end of the economizer and withdrawn at the other end, will flow through tubes, while the hot gases circulate around them in the opposite direction from that of the water. The tubes rapidly pick up soot and fine ash, and they are provided with mechanical scrapers to keep the tube surfaces clean.

The economizer (Fig. 21) is usually set in a brick chamber located in the path of the flue gases leaving the boiler and before they enter the stock.

This provides a definite saving of heat because any heat that may enter the boiler with the feed water is just that much less work for the boiler and furnace to do, and therefore that much less fuel consumed to do the same work.

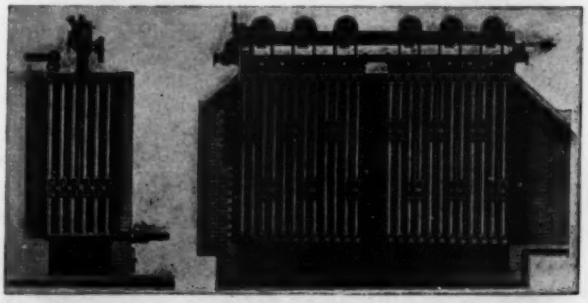
Economizers should operate at about 70 per cent efficiency. This is figured from the temperature rise of the water and the number of pounds going through to the temperature drop of the gases and their number of pounds going through. For instance, in our installation we have it figured that 60 degrees rise of the water should make 110 degrees drop in the gases, this is our 100 per cent operation. Now if our feed water enters at 200 degrees and leaves at 270 degrees, while the gases enter at 575 and leave at 390 degrees, this gives us 70 degrees rise for the water and 185 degrees drop for the gases. Our 100 per cent is 60 degrees rise to 100 degrees drop, which equals .6 to 1. Accordingly we multiply the actual gas drop by .6 and divide this into the actual water rise, thus:

Efficiency:

$$\frac{70 \times 1}{185 \times .6} = 63 \text{ per cent}$$

Nowadays with high pressure boilers the economizers are of steel construction, and in some installations they are built integral with the boiler and have the appearance of being the last pass. This makes a compact installation and affords room for an air preheater behind it.

It always pays to heat the feed water with surplus exhaust, even though there is an economizer. Of course, the temperature difference of the water and gas will not be as great, with water entering at high temperature, but the economizer is only supposed to get the heat that is left over after the boiler has absorbed all possible heat. Because there is an economizer behind the boiler, however, is no reason that the gases should leave the boiler at a higher



Courtesy, Green Fuel Economizer Co.

Fig. 21—Cross and longitudinal section through economizer chamber

temperature than can be avoided. The economizer to the steam plant is the same as a save-all is to the pulp mill.

Examination Questions

(1) What is the object of mechanical stokers?
(2) What distinguishes the two classes of stokers?
(3) Define a B.t.u.
(4) What is the numerical value for the mechanical equivalent of heat?

(5) How many B.t.u.'s in an engine horsepower?
(6) How many B.t.u.'s in a boiler horsepower?
(7) How many B.t.u.'s does it take to convert one pound of water into steam from and at 212 degrees?
(8) Does the water and gas both travel the same way or not in an economizer?
(9) If the gas entering the economizer is 625 degrees, and leaving at 400 degrees, the water entering at 195 degrees and leaving at 268 degrees, what will the economizer efficiency be?
(10) What is the effect of heating the feed water before entering the economizer?

Cost Accounting in the Paper Industry

Part XIX—An Analysis of Cost Accounting Forms

By D. A. WILCOX

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

IN preceding articles an outline was given of the simplest possible form of cost accounting. In further discussing this outline, an endeavor will be made to weigh the good and bad points of what is really no system of "cost accounting" at all, just the elementary bookkeeping essential in any sort of business, the only part at all relating to costs being the method whereby grade costs are estimated for sale purposes. It is important, however, to consider what the system actually accomplishes and what assistance the management may expect from it as a means of controlling expenses and getting at the costs of individual grades. Perhaps the best way to start is by listing some of the things it does not do.

Deficiencies of the System

1—There are no records of departmental expense.

2—There is no "tie in" between the costs of grades and the general books, and hence no automatic means of knowing whether or not the costs, in total or individually, are correct.

3—There are no standards of expense or usages of materials whereby to judge actual operations.

What It Does Give—When we consider, on the other hand what we do get out of this system we can list the following:

1—Estimated costs of grades.

2—A total cost for the month of the expenses actually incurred, including a rough estimate for depreciation and other fixed charges.

3—An "overall" cost of all papers made during the period.

4—Low office expense—in the office.

What the Management Gets Out of It—In attempting to ascertain what the management would get out of such a system we must consider the system itself for the moment, entirely detached from the manager's personal knowledge gained from personal observation. To do this it is necessary to put ourselves in the place of a management at a head office, perhaps thousands of miles away from the mill or factory.

Obviously the management could tell one thing and one thing only—whether or not the business netted a profit during the period under review. If a profit was not made they would then be at loss to account for the fact, or to know what action should be taken to rectify the condition. Assuming costs were higher than usual, they would not know what departments with which to credit them, seeing that no departmental costs are provided for in the system.

Assume that the management had the costs analyzed on a unit basis, i.e., the total cost for each classification of expense—namely, so much for labor, materials, supplies, fuel, power, etc., each divided by the total production for the month, and then compared each item with a similar analysis for some preceding month or an average, they could, of course, tell at once which items were higher or lower than those used as a basis of comparison, but knowing this, what then?

Unit Costs of Limited Value for Control

Labor is a large item and covers a multitude of charges. Supposing it is high. What caused it? What department was inefficient in its use of labor? There is nothing in this system to show. Only a breakdown by departments, or personal investigations, would show. Is or is not the increased labor justified by the character of papers made? After all, do we have any idea whether or not the standards used as a comparison are good? There is no way to tell unless we get standards based on scientific tests and compare the actual results, item for item, with them.

Production Largely Affects Costs

The production has a great deal to do with the unit costs and yet many items of expense are quite independent of production; thus labor on the paper machines is about the same each day the machine

runs; it is dependent upon the time factor, and yet production depends upon the character of the orders, the deckles, the basis weights, the number of changes and several other factors over which the boss machine tender has no control. The same is true of many other items of expense—they are dependent upon factors which have nothing to do with production and cannot be expected to vary with it; consequently unit costs are untrustworthy guides for the control of such items. I do not believe that managements who become perturbed because the unit cost of paper goes up a dollar or two per ton, or satisfied because it goes down, have any conception of how meaningless that may really be. The character of the papers made have a determinative effect on the costs, entirely aside from any factor of operating efficiency; for instance, if a large proportion of bonds and other high stock cost papers be made during the month, the unit costs will naturally increase. Of course the price received for them should increase also so that the net effect would be the same, but as a means of judging operating efficiency the value is just zero until it is related to the factors tending to cause a variation in cost. Material used must be considered in light of the grades of papers made and the tie up must be exact; conversion costs must be considered in the light of the character of orders, the types of finish, the deckles and weights and other things. The system under consideration does not give us any information about these.

As a matter of fact the overall unit cost of paper made during a given period is practically of no value as a means of judging operations. It may give a rough idea of conditions, but when it is a question of controlling cost and operating a mill, rough figures are valueless. It is important to know the facts and get exact figures and information if a cost system is to be of any value for such purposes.

Unit Costs Commonly Used

It may be a shock to hear that the average unit overall cost of paper is practically worthless as an aid to control, because it is such common custom to watch it, and it is in such general use. Suppose, however, that you are the manager of a mill, but at some distance from it, and you are confronted with an average cost of $110 per ton, as against a previous average of $100. What are you going to do about it? You may call the mill manager on the carpet, only to be told that it was caused by low production, by the high percentage of cut paper made, by the high stock cost due to making high grade papers, by a lot of wires going wrong at the same time, or a thousand and one things. Can you say he is wrong? Can you figure out any definite action which he should take in regard to it? Of course not. So many factors, some legitimate and some the result of efficiency or inefficiency can affect the unit cost that, without further information, you are lost.

"But," you may say, "it is a good alarm clock to tell you when things begin to go wrong." Unfortunately, it is not even that. The main thing which will shoot up the unit cost suddenly—two to five or more dollars a ton—is lack of production caused by shutdowns. Items which run it up in smaller amounts, one to two dollars, are apt to be caused by differences in grades or types of finish—an interchange of 10 per cent as between the percentages of M. F. Rolls and Super cut made may increase the total cost by one dollar a ton for the entire production—and none of these things is within the control of the factory manager. Controllable items may, though it is unlikely, get so far out of hand as to increase costs a dollar or so, but usually they don't—not all of a sudden, at any rate.

How Costs Are Controlled

The only way to control costs is to know in the first place what each item in the cost should be, and then to watch closely the actual costs and compare them, item by item, against the standards so as to ascertain where things are going wrong the standards must also be taken into consideration. Accordingly, the only way to know if stock costs are too high is to know what they should be for the very papers made; whether or not labor costs are high, by knowing what they should be, department by department, under the conditions prevailing, and then comparing the actual against them.

If the functional costs, i.e., the expenses of operating each department and the efficiencies, losses, etc., be kept at a minimum the unit costs must be at a minimum. Control your functional costs and the unit costs will take care of themselves. Any attempt to control functional costs through the medium of unit costs would be to put the cart before the horse.

Actual Costs Do Not Control

It will be seen that as a means of controlling functional costs, the actual system as described does not aid because it gives absolutely no costs by functions. As a means of controlling expenses, it is also a dud because expenses can only be controlled through a careful analysis of the functions.

In a mill using such a system, the manager must depend upon his own ability to observe conditions and at the same time place reliance upon the observations of his subordinates. This is not an impossible task, and it is, indeed, depended on to a great extent in many mills. It must be remembered that a large part of the control of any mill, no matter what system is used, is concerned in the personal observations of the manager, quite regardless of figures; for any manager who is worth his salt must be able to sense trouble and carry in his head a huge

mass of standards by which results are checked by him long before he ever sees a cost report. The chief weakness in this is that memory is fleeting; unless it is reenforced with accurate reports, events are not connected up and many important trends fail to be developed. Losses may creep in little by little and not be observed. Another difficulty is that the standards he carries are apt to be based on past experience and furnish no guide as to what could be accomplished if the truth were known.

Written Records Necessary

Nothing can take the place of written records; they tie together a multitude of isolated events whose distinct connection would never be discovered without them, and they form the historical basis for sound future planning. Particularly do they permit of that unbiased investigation by persons not responsible for performance which is so valuable in locating losses often buried by a mass of personal prejudice or willingness to accept things "as is" without further analysis.

It is, as a shrewd manager once said: "I don't need a cost system to tell me when a paper machine drops into the cellar; I can go out and see that. I want a system which uncovers the many **little** things that go wrong and eat up the profits and which I would never discover without a system."

Get "Out of the Rain"

By MAURICE C. MOORE

The frame of mind in which you think our business problems, may be much more a cause of failure than any difficulties in the problems themselves; actually, many possible helpful factors may fail to materialize altogether if you have not, in advance, seized them in imagination.—Author.

AN English friend of mine, who hides a good deal of keen wit and power of shrewd observation under a facetious if not a sometimes rather provokingly flippant exterior, said the other day of a mutual acquaintance that he would have gone far had he not taken so many decisions about his business "when he was sitting in the rain, with wet feet, under an umbrella!"

The comment so exactly hit off the situation that we both roared—he no less than I, for he is one of those apparently rare humorists who thoroughly enjoy their own jokes and do not mind letting you see it. It was a pen picture. Our mutual acquaintance has health, energy, brains. He has as thorough a knowledge of his trade as almost any man I know. He can think well and talk well. He is a worker and does not spare himself. But it is evident to everyone who knows him intimately that he is only a qualified success. He has not reached the point he might have done, but for . . . But for what? It is hard to say, much as I have tried to get at the cause. Temperament? At first sight, bearing in mind that caustic judgment, one would think it must certainly be that. Yet I don't know. He is never demonstrably "down in the mouth," and it would be unjust to call him a pessimist. He certainly does not appear to be that by nature. Possibly training has had something to do with it. Perhaps there is a certain poise or attitude or habit or frame of mind into which he sort of slumps, when he comes to anything in his work really crucial. Very puzzling. But whatever the explanation, when the moment comes for an important decision, he does not seem able to prevent his pep from getting below par, his grip relaxing. Then what emerges, as our witty critic remarked, might have been the product of the thinking of someone "sitting in the rain," and feeling none too divinely-inspired in consequence.

Of course at such a time you are hardly likely to be near your best. For however indifferent he may be to weather vagaries, I defy any man to think straight, forcibly and constructively whose pedal extremities are in a puddle and who cannot get exercise! Not a few whom we know seem to be rather too frequently thus out in the damp, figuratively speaking. Decidedly it is not **cold** feet (meaning funk) that they are suffering from, for often they are men of proved and superfine courage; but rather a missing of the right sort of warm and stimulating atmosphere. This little article, perhaps, will not have been written wholly in vain if it comes under the notice of some such and leads to their taking stock right now and asking themselves to what extent this trait exists in their make-up and whether any of it need be there.

Let us analyze a little.

How can you know yourself as coming in the "damp feet" category? I think the sure sign is this —you come in it when, however carefully (and very sensibly) you take note of all the risks and chances **against** your success with the enterprise in hand, you do not at the same time dig no less deep to discover anything and everything that counts in its favor. It seems to me that whatever the proposition you enter, there is almost always about an equal number of things to be said for and against it. "On the one hand this; on the other hand that." This seems to be discouraging; that is certainly promising. The damp-feet merchant stops before he has got his list complete. And **where** he stops short is at the point of visualizing all good auguries. He has found out the **worst** (and a very sane thing to do, for it is a poor optimism that is based on ignorance of hard fact) but he has not penetrated far enough into the opposite direction: he does not know the **best.**

They say it is hope that keeps the world going. But is it not rather common for people to be prepared to believe in the reality of the worst rather than in the reality of the best? The really fine thing seems

(Continued on page 1038)

Current Thought by William Sibley

Are We Going the Way of Russia—or England?

ABOUT four and one-half years ago, there was held a meeting of the Organizing Committee of the Communist District of New York for the purpose of making a survey of that "District" in order to pick out a weak and vulnerable point near New York where the Communist organization might concentrate its activities and get the most results. The "results" they sought were publicity.

After considerable study of the many industrial communities near New York City, the little town of Passaic was selected as affording the best opportunity for Communist action. In the first place, Passaic is for the most part a one-industry city. To get the workers out of that one industry would mean to paralyze the entire town. In the second place, Passaic is 70 per cent foreign born, an astonishing percentage of these aliens being unable to speak, read or write the English language. In the third place, Passaic has traditionally been a radical town. In former years the I. W. W., the Socialist Labor Party, and the Amalgamated Clothing Workers had all conducted strikes there.

Now the "Organizing Committee" which was holding its survey meeting knew full well that the Botany Mills was a textile industry which for several years had been in the red. Wages had been cut, sales and advertising expenditures had been trimmed, overhead had been reduced in every conceivable way in order to bring the business back to a black-ink basis. But four and one-half years ago, anyone who knew anything about balance sheets knew that if the Botany Mills was to continue abreast of competition further retrenchment would have to be made—including wages.

The "Organizing Committee" also knew that there was already employed by the Botany Mills three members of the Communist Party. But since three men could not be very effective against a payroll of 8,000, the Committee sent out a call to other eastern Communist units. This call asked that every Communist member that could come and hold a job in a worsted mill, should come one by one to Passaic, bearing no insignia or markings of radicalism, and by some hook or crook (preferably by willingness to work for low wages) get past the employment man, get on the job, and start agitating from within. This call was answered promptly, with the result that not long afterward the Botany Mills had a nucleus of 35 Communists scattered in different departments of their large plant.

Weeks and months dragged slowly by, the internal situation among the mill's employees all the while evolving toward an outburst. Finally one day the Company posted the inevitable notice which tactlessly announced a reduction in wages. That was the electric spark. Seizing the opportunity, this small Communist group of 35 gathered about themselves those who had shown themselves to be warm to their doctrine, and started a line through the plants. Presently, all the workers found themselves moving down the aisle, down the stairways, then under the stress of momentary mental violence and the leadership of the Communist group, out into the streets that led the parade to the Communist headquarters where they found themselves voting a general strike.

But was that all? No, indeed. Employing that sinister moving picket line which radicals use, they went to other mills where there were no grievances, where the workers did not wish to strike, where there was no reduction in wages even contemplated. They even picketed the Fowler-Huffman mills, which organization pays the highest scale of wages in the United States for that class of work, and where the employees had a voice in the management of the Company's affairs. Here and there, under the in-

fluence of mass suggestion and mass intimidation, these thirty-five Communists enlisted over sixteen thousand textile workers into a general Passaic strike which palsied and paralyzed the entire Passaic Valley and ended, just as the Communists wished it to, in reams of newspaper and magazine publicity.

Looking back at the strike, now nearly four years gone, no one would be so silly as to believe that the Communists were sincere. They knew, before they pulled the strike, that there wasn't a ghost of a chance to win. They knew it was a hopeless strike so far as the Passaic workers were concerned. But since they sought only newspaper and magazine publicity, what did they care?

And so, working on those poor, hapless, foreign people, these agitators fired them with false hopes of gaining control of the machines they had been running, and urging them on to greater and still greater sacrifices—all in the interest of "the cause." And the workers believed them. Indeed, why shouldn't they when such a large percentage could neither read nor write the language common to this country.

Continuing this for weeks and months, inciting the workers to unbelievable sacrifices and poverty, the leaders finally realized that they had just about squeezed the orange of publicity dry. So presently they folded their tents like Arabs and disappeared into the bowels of New York City, leaving the Passaic workers to crawl and cringe back to the mills they had so blithsomely left months ago. And some of them to mill gates which haven't opened to this day.

That strike is just one example of Communist organization. There are so many others, equally vivid, that to publish a brief account of each would mean to devote twelve issues of THE PAPER INDUSTRY to nothing else.

Communism, or the "Red" movement in this country is extremely well organized. There are those who believe Communism is agitated in this country by only a small, obscure handful of unbalanced radicals. Letting the truth of that belief pass for the moment, let me remind such people that in combating Communism in this country, we are up against not only those who are here, but the entire world-wide communist movement, of which the Communist Party in this country is only the American limb or outpost. To explain:

The "Comminturn," or International Committee, which sits in Moscow, U.S.S.R., is the body in absolute control of all world-wide revolutionary activities. It presides in Moscow under the direction of the Russian government and issues laws which must be obeyed and never altered. In that Comminturn there is what is known as the American Committee, a committee of experts and strategists who devote most of their time to the study and furtherance of American revolutionary measures. This is the body of men which appoints—appoints—the executive secretary and the executive committee of the American Communist Party which functions from New York City. An example of how this organization works:

Some time ago there arose a disagreement among the executive secretary and the executive committee of the American branch in New York City regarding methods and tactics they should employ. It really was a very unimportant and hair-splitting disagreement in the main but it did bring into play the very important matter of authority. And so there went to Moscow the national secretary of the Party (Mr. Lovestone) heading one faction, and a representative of Mr. Foster, heading the opposing faction. Arriving in Moscow, these two opponents laid their troubles before the Comminturn. The Comminturn listened to the evidence and the arguments—and then passed down their decision that Mr. Lovestone should sustain the position of Mr. Foster. That was the law.

Later on, but while still in Moscow, Mr. Lovestone was so indiscreet as to make the remark that when he again reached America that he would not obey the Comminturn, but carry on as he wished. This remark was overheard by the secret police, with the result that Mr. Lovestone had to smuggle himself out of Russia under an assumed name to get out at all, while his associate was arrested, and so far as I have been able to learn, still lies to this day in a dungeon in Moscow. Merely for having said that he would not obey the Russian Comminturn.

Communism Growing Rapidly

As to the value of the belief that Communism in this country is of no importance—that it is represented only by a little body of agitators—that it is needless to worry about it because it can never grow in this nation of 115,000,000 enlightened people, permit me to suggest that the reader just try to get a seat in any of the more important Communistic meetings. Take the May Day demonstrations, or the celebrations for the memory of Nikolai Lenin, for instance. Such meetings are not held in obscure halls, as some apathetic persons believe. In New York City, the last Lenin celebration was held in Madison Square Garden. And every seat in that great auditorium was filled, standees were filling the aisles, while literally hundreds of people were milling and pushing around on the outside trying, vainly, to reach the doors. In such meetings, which usually last for the greater part of the afternoon, these great audiences cheer and applaud and shout praises to speakers who stand before them and vilify and revile American institutions; applauding every mention of the "Red" movement or the Soviet, and hissing and cat-calling the mere mention of an established American institution.

As might be expected, such audiences are pre-

dominantly foreign. It may be found an astonishing fact, but none the less true, that over 50 per cent of all dues-paying members of the Socialist Party of the United States are enrolled in the foreign speaking branches where they do not read, write nor speak the English language. In the Worker's Communist Party, the percentage of foreign-born members is far higher. However little or much that may mean, the recent period of unemployment has done much to swell the ranks of the Communist Party of America, and it is high time we took note of the fact.

Where will Communism end in the United States? There are those who sincerely believe the "Red" elements in America to be a giant force, organized in such a way as to be able to overthrow our government at a moment's notice. Then there are the socially apathetic who say the Communist influence in this country is weak, impotent, and silly. Personally I have little patience with either side, but I do believe that somewhere between the two extremes lies the truth—and that the apathetic American is far more dangerous to America than the alarmist.

Just where Communism will end, if it ever does, no one knows. It is difficult to believe that the United States, with its high percentage of literacy and low percentage of poverty, could be brought to a point where the nation and all its institutions might be overthrown in a manner approximating the Russian revolution. Our social standards, our educational systems, our industrial practices, our agrarian conditions are totally different from those in Pre-War Russia. Rather than follow in the footsteps of Russia it seems to me that we are following the English. There the Communists, the Socialists, the Left Wingers, the Liberals, and others of varying shades of carmine, have gradually brought the English government to a point far removed from where it was in 1900. Government ownership of public utilities, government ownership and operation of manufacturing plants and retail establishments, government subsidies and control of socialistic institutions, unemployment doles, old-age pensions, and countless other socialistic ideas have been impressed upon the Government until to-day England is bowing under the weight of endless red-tape. All this is causing dissatisfaction among the English people to a degree that promises trouble in the future. England is afflicted with the dread disease of Socialism—and Socialism is merely Communism dressed up in Sunday clothes.

As England progresses into the mire of Socialism, the United States follows. Government ownership, unemployment doles, old-age pensions, needless soldier pensions, government insurance, farm relief, and countless other Socialistic do-dads are on their way to Washington.

The way to stop it is through the ballot box. It's all up to you.

Get "Out of the Rain"

(Continued from page 1035)

too good to be true. But there is no way out of this, unless the chance of reaching that fine thing is as tangible and strong a reality to you as are the worst of the factors which seem to militate against success; you are, no matter how indignantly you may repudiate the idea, sitting in the rain, under that umbrella.

This is the crux of it. Both classes of facts are real—those which favor our undertaking and those which whisper "Don't attempt." As a rule, the experienced man of business has not to be greatly on guard against overlooking any of the latter, for the instinctive first process is to delve for and reckon up odds; but that some of us need to be warned that we are not working hard enough to visualize the former, surely there can be no doubt. True enough, it is canny to look around with a microscope for every speck of risk that weights the scales against you, but at the same time we need to use just as often a telescope, focused on the many good things higher up.

I remember reading this somewhere; **All really good work is done in a rosy glow,** and although that may seem in some cases to be contradicted by experience, it seems to me in the main true. The rosy glow is obtained not at all by "blinking" the difficulties and hazards of the work, but by firm and vigorous confidence that a compensating advantage exists for every such difficulty. This is not mere faith, which may prove baseless, but **knowledge;** the doer has enthusiastically explored, right up to the limit to discover **every** circumstance that will favor his effort, and has found so much there that he feels the "rosy glow" of success already settling down upon him before he has well launched out.

He succeeds; he triumphs. And fundamentally, conditions were no more auspicious for him than they were for the man who, faced with a similar task, applied himself to it with a mind no more buoyed and braced up than would be that of a gentleman found "sitting in the rain, with wet feet, under an umbrella."

Safety must come from within, rather than from without. This is certainly an essential task and it is not an impossible one. There are no learned textbooks to be digested, no libraries to be searched, nor laboratory work to be done. The knowledge required is the result of one's everyday experience and observation. The literature connected with this matter can be quickly gathered from the black headlines of our daily press.—Dr. S. Parkes Cadman.

The law of worthy life is fundamentally the law of strife. It is only through labor and painful effort, by grim energy and resolute courage, that we move on to better things.—Theodore Roosevelt.

Program of the Paper and Pulp Section of the Nineteenth Annual Safety Congress of the National Safety Council

TO BE HELD AT THE FORT PITT HOTEL, PITTSBURGH, PA.
SEPTEMBER 30, OCTOBER 1 and 2, 1930

General Chairman, Samuel Pruyn, Finch, Pruyn and Co., Inc., Glens Falls, N. Y.

Secretary, N. F. Bartlett, Hollingsworth and Vose Co., Boston.

Vice-Chairman for Canada, A. P. Costigane, Ontario Pulp and Paper Makers' Safety Association, Toronto, Ont., Canada.

Vice-Chairman for South, G. W. Phillips, The Champion Fibre Co., Canton, N. C.

Vice-Chairman for Extreme South, W. H. Jennings, Bogalusa Paper Co., Inc., Bogalusa, La.

Vice-Chairman for Middle West, F. H. Rosebush, Nekoosa-Edwards Paper Co., Point Edwards, Wis.

Vice-Chairman for East, B. D. Rogers, Bird and Son, East Walpole, Mass.

Vice-Chairman for Paper Box Manufacturers, H. C. Sackett, Alton Box Board and Paper Co., Alton, Ill.

TUESDAY, SEPTEMBER 30
MORNING

Fort Pitt Hotel, Lower Level, Tudor Room

9:30 Reports from Regional Directors. (Two minutes each.)

9:50 Report of Committee on Health Research—J. J. Plzak, Chairman.

10:05 Report of Committee on Paid Secretary—W. J. Brennan, Chairman.

10:20 Address—Fordyce P. Stanley, Vice-Pres., Glens Falls Indemnity Co., Glens Falls, N. Y.

10:50 Medical and Nursing Service in a Paper Mill—Dr. Louis H. Frechtling, Dir., Dept. of Industrial Relations, The Champion Coated Paper Co., Hamilton, O.

11:20 Discussion.

11:40 Report of Nominating Committee and Election of Officers.

Visit the Exhibit, Tuesday Afternoon, It's Paper and Pulp Section Day

WEDNESDAY, OCTOBER 1
LUNCHEON

Fort Pitt Hotel, Main Floor, Dining Room
12:30 o'clock

1. Data on the Contest—A. Scott Dowd, Chairman, Contest Committee.
2. Presentation of Awards to Contest Winners.
   National Safety Council Trophies.
   The Paper Industry Trophy—Edward B. Fritz, Publisher, THE PAPER INDUSTRY, Chicago.

WEDNESDAY, OCTOBER 1
AFTERNOON

Fort Pitt Hotel, Main Floor, Dining Room

2:00 Achieving Built-in Safety—W. J. Brennan, Safety Dir., St. Croix Paper Co., Woodland, Maine.

2:25 Discussion.

2:45 Discussion of the Safety Code for Paper and Pulp Mills—Led by R. M. Altman, Chairman, Code Committee.

3:15 Selling Safety to Employees—C. F. Otto, Safety Eng., Employers Mutual Liability Insurance Co., Wausau, Wis.

3:45 Discussion.

THURSDAY, OCTOBER 2
MORNING

Fort Pitt Hotel, Main Floor, Rose Room

8:00 Informal Breakfast Meeting.

9:30 Discussion of 1931 Contest Rules—Presiding, W. F. Ashe, Employment Manager, Thilmany Pulp and Paper Company, Kaukauna, Wis.

10:00 Questions and Answers—(Discussion of questions previously submitted.)

Wood Engineers to Meet in New York

Engineers and executives of the wood industries will meet in New York at the Hotel Pennsylvania on Thursday and Friday, October 16-17 under the auspices of the Wood Industries Division of the American Society of Mechanical Engineers, the meeting and discussion being open to all engineers, executives and supervisors in the wood industry. Scheduled for the meeting are four conferences on engineering and management problems, and engineering training will be the principal topic at the dinner of the meeting.

An exhibit will be held in conjunction with the meeting which will enable members and guests to see new developments in tools, instruments, new woods, etc. At the evening session on the first day, B. B. Fogler, of Arthur D. Little, Inc., Cambridge, Mass., will present a paper on "Opportunity for Utilization of Wood Waste in the Chemical Industry," and at the dinner on Friday evening, October 17, Prof. Nelson C. Brown, acting dean of the New York State College of Forestry, Syracuse, N. Y., will deliver an address on "Need of Forest Products Engineers in the Wood Working Industries."

Paul Bilhuber, assistant superintendent of the Steinway Company, New York, is chairman of the committee on arrangements for the meeting.

D. M. A. A. to Meet in Milwaukee

Prominent advertising, sales promotion and merchandising men have been scheduled to speak at the 13th annual convention of the Direct Mail Advertising Association to be held at the Milwaukee Auditorium, October 1, 2 and 3.

As in previous years, there will be a number of special departmental meetings in addition to the general sessions. The retail, production, industrial, financial, better letters and house organ groups will be represented, each offering a program which will make attendance at the convention well worth while to everyone identified with the advertising and merchandising field.

On September 1, Barrett-Cravens Co., manufacturer of Barrett Lift-Trucks, Steeleg Platforms and Portable Elevators, moved into its new modern plant at 101 West 87th Street, Chicago.

Air, Heat and Moisture Balance for Paper Machine[1]

By A. S. GOODRICH and H. G. BREHME
Engineers, Hammermill Paper Company, Erie, Pa.

TESTS have been made recently by us in order to determine the amount of steam required in the paper machine dryers and the quantity and condition of the air passing through the machine rooms. Such information is valuable in order to see if the efficiency of the present equipment is reasonable or can be improved. Then the problem is—what changes, if any, are feasible or necessary; how much will they cost; will there be increased efficiency and betterment and what savings, if any, will be made? If change or improvements are made, then it is desirable that another similar test be run in order to obtain comparative data.

We propose to describe in this paper the general features of the air and steam supply, the method of making the various tests and the data obtained.

General Description

Tests were made on Hammermill Paper Company's No. 3 and No. 4 paper machines which are located in the same room. The machine building is of typical brick wall construction with basement for the drives. The roof is of tongue and groove plank covered with roofing felt. Fig. 1 shows the plan of the machine room, and location of the machines and adjacent buildings. Fig. 2 is a typical cross section of the machine room and shows the relative location of the machines, cross ventilating systems, main air supply ducts and roof ventilators.

The possible sources through which heat, air and water can enter or leave the room are:

Entering:

I. Steam for the paper machine dryers
II. Room air supply
  a. Main air supply fan
  b. Dryer pit supply fans for each machine
  c. Calender fans for each machine
  d. Adjacent rooms through doorways
  e. Out-of-doors by leakage
III. Power consumed as friction and converted into heat
IV. Paper
V. Steam to wire and dandy roll (not measured)

Leaving:

VI. From dryer circulation system
  a. Condensate
  b. Vacuum pump
VII. Exhaust air
  a. Exhaust fans of cross ventilation system for each paper machine
  b. Ridge ventilator
  c. Stack ventilators
VIII. Paper
IX. Building losses

Heat enters and leaves with all the items listed. Air enters with item II and leaves with item VII. Water carried by the air enters with item II but the largest amount comes from item IV and leaves with item VII.

Steam Supply

No. 3 paper machine has 32 dryers, 48 inches in diameter and 102 inch face. The total dryer area is 3,420 square feet and the effective area is 2,400 square feet.

No. 4 paper machine has 32 dryers, 48 inches in diameter and 130 inch face. The total dryer area is 4,350 square feet and the effective area is 2,920 square feet.

Both machines are supplied with steam in the same manner; each machine is driven by a variable speed engine; the auxiliaries of each machine are driven by a constant speed engine. Steam from the engines exhaust into the dryer supply header. Live steam enters the dryer supply header through a reducing valve. The condensate from the dryers discharges to a header and in each case is returned to the boiler house by means of tilting traps.

A vacuum pump removes the air from the return headers and a certain amount of uncondensed steam coming through with air is condensed by water injected into the pump.

Air Supply

Air for the paper machine building is supplied by an engine driven fan located in the basement. The fan discharges into a large rectangular duct which enters the paper machine room and divides into two branches which run along the room close to the outside wall at the back of the machines and just under the roof.

Each machine has a fan which supplies heated air from the basement or outside to the dryer pit where it is distributed by means of a duct. The dryer pits are closed.

Each machine has a calender fan which takes air from outside and blows it on the calender rolls.

All the remaining air comes from adjacent buildings through openings or doorways and from out-of-doors.

Moisture

A certain amount of moisture enters with the air and all the water evaporated from the paper is removed by the air passing out. Air leaves the room through three cross ventilating fans for each machine, through a continuous ridge ventilator and through three vertical stack ventilators, two of which are located over the wet end of the machines and the one over the winder. Most of the water removed comes from the paper being dried. The air also picks up some moisture evaporated from the wet end of the machine and from the steam supplied to the surface of the wire and to the dandy roll. We could have measured the steam supplied to the wire but did not; we could not measure the amount of evaporation at the wet end but understand that this is considerable and may amount to 10 to 20 per cent or more of the total amount of moisture leaving the room.

Heat Tests

Pressure gauges and thermometer wells were installed in the steam supply lines to each machine as shown in Fig. 3 and pressure and temperature readings were taken of the exhaust steam from the engines, the live steam after the reducing valve and the mixture of the steam in the supply header. All readings showed some superheat. Therefore, the quality was easily determined. In order to measure the condensate, the discharge lines of the steam traps for each machine were connected to a cooler consisting of sixteen 2 inch pipes each about 10 feet long connected by means of return bends and immersed in a wooden tank through which running water from the mill supply was passed. This eliminated the flash steam. The condensate for No. 4 paper machine was measured by means of a Cochrane tilting type meter calibrated for 117 pounds of condensate for each discharge of the bucket. This meter was provided with a counter and also a graphic recorder.

The condensate from No. 3 paper machine was measured by means of barrels which had been previously calibrated with scales. The number of barrels filled was recorded and the quantity computed.

The temperature of the condensate in each case was taken before entering the condenser coil. The total heat in the condensate substrated from the total heat in the steam supplied to the dryers plus the amount of heat passing through the vacuum pump gave the total amount of heat furnished by the steam to the dryers.

The heat passing through the vacuum pump was determined by measuring the amount of water with a displacement meter and taking the temperature before entering and leaving the pump. The amount of this heat was divided among the two machines in proportion to the paper produced.

In order to determine the amount of heat supplied with the air, it was necessary to measure the temperature and condition of the outside air, measure the quantity handled by each fan and the temperature and condition of the discharge. From this we could determine the amount of heat units added to the air by the various heaters. In each case we considered the transmission of heat as being 100 per cent efficient. We took the total heat of the steam as being the same as that in the live steam header and assumed the condensate leaving the heaters to be 212 deg. Fahr.

[1]Presented at fall meeting of T.A.P.P.I., Erie, Pa., Sept. 3-5, 1930.

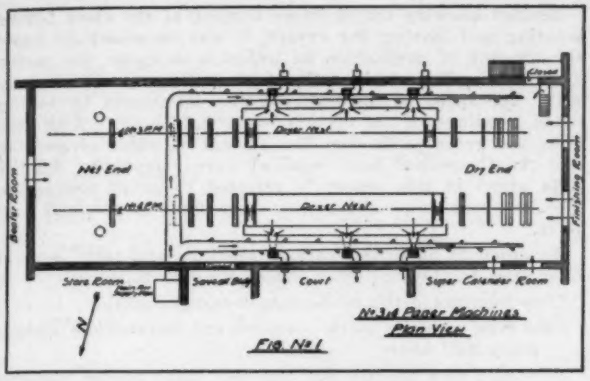


FIG. No 1

The heat leaving with the air exhausted was determined by measuring the quantity and condition of the air.

Air Tests

In general, the air handled by the fans was determined by means of static pressure readings before and after each fan shown in Fig. 4 for those units of which we had the performance curves. The air handled by the other fans was determined from velocity readings and area of ducts. All readings were taken by means of a pilot tube and draft gauge. The velocity of the air entering from adjacent buildings through doorways was measured by means of the anemometer. Four readings were taken in each doorway and the average velocity used in conjunction with the area of the opening to determine the quantity. These figures are not expected to be exact. The ridge ventilator consisted of 48 separate openings or stacks, 48 inches long and of various widths from 12 to 18 inches. The velocity of the air through these openings was computed from an average of three anemometer readings and the area. The amount of air passing through the vertical stacks was obtained in a similar manner.

In order to determine the quality or condition of the air, dry bulb and wet bulb temperatures were taken.

The air which comes in through the doorways is heated in the adjacent buildings by their heating systems. We assumed that the steam available for this had twelve pounds pressure and that the latent heat was used.

Dry and wet bulb temperature readings were made in the adjacent rooms, basement and out-of-doors. The amount of air, water and heat coming in was calculated. When computing air balance, it was found that more air was going out than coming in. The excess air was assumed to have come in as follows:

From adjacent rooms	25 per cent
From basement	25 per cent
From out-of-doors	50 per cent

Dry and wet bulb temperatures were taken twice at various

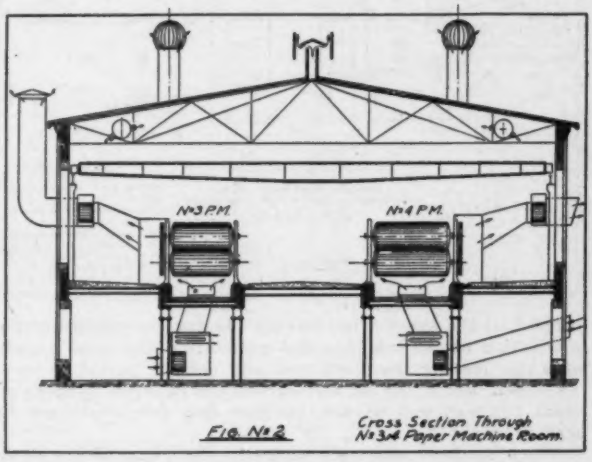


FIG. No 2 Cross Section Through No 3-4 Paper Machine Room.

locations and elevations in the paper machine room in order to determine the air conditions.

Moisture Tests

The moisture entering the room with the air was determined from the quantity and condition of the air as regards

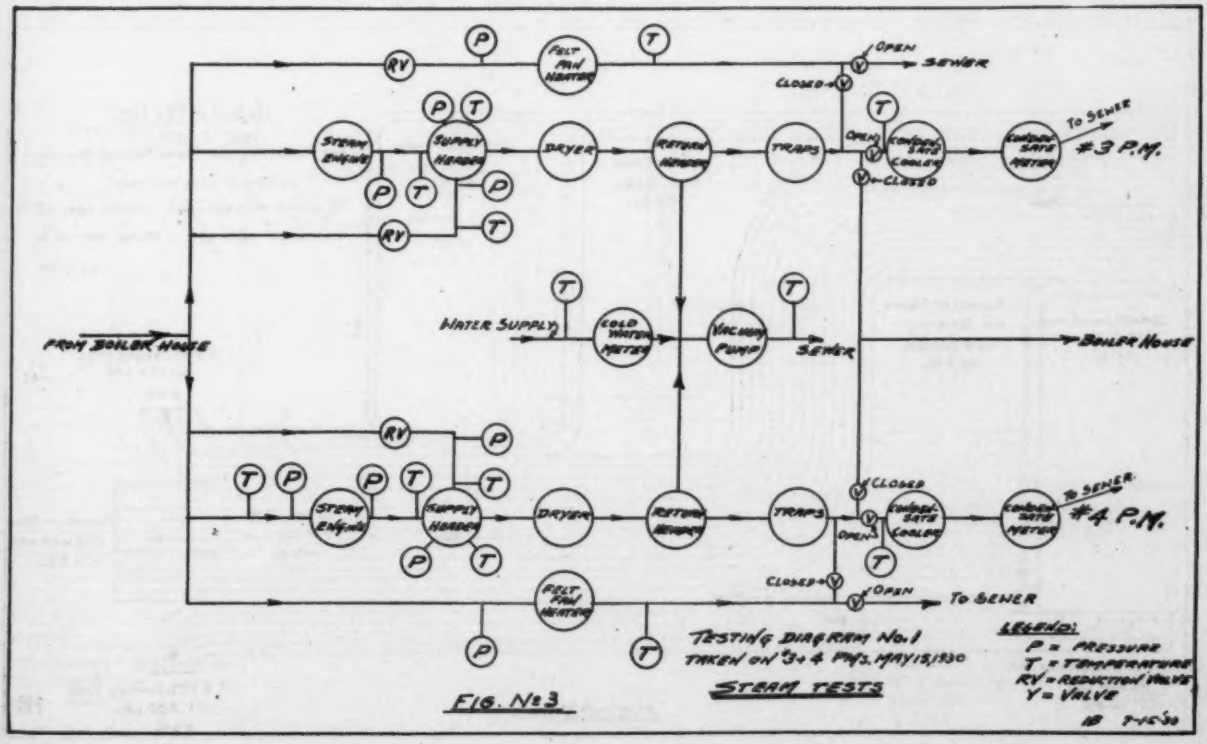


FIG. No 3

moisture content. The amount of moisture leaving the room with the air was calculated in a similar manner. Most of the water added to the air passing through the room is that evaporated from the paper when passing through the dryers. This quantity can be checked by measuring the moisture content of the sheet before entering the dryers and the moisture

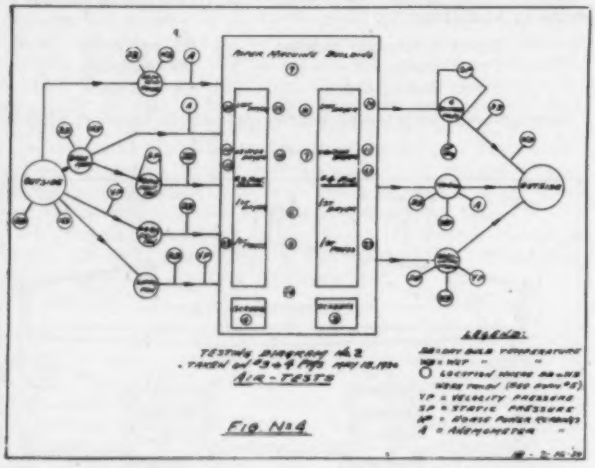


FIG. No 4

content of the sheet after leaving the dryers, measuring the production of the machine and calculating the total pounds of water leaving the sheet over any definite period of time. As stated before, the air also carries out moisture evaporated from the wet end of the machine but this could not be measured.

When ready to start the test, the sheet was broken down at the third press and run up on the doctor. Samples of paper were taken one foot apart across the whole width of the sheet and placed in jars. After the sheet was passed over the dryers and conditions became settled, samples were taken at various points across the sheet for moisture tests. Samples were also taken in order to determine the basic weight. The moisture tests and basic weight tests were repeated at the end of the test run.

Besides knowing the moisture content of the sheet before entering and leaving the dryers, it was necessary to know the amount of production in order to compute the water evaporated. The width of the sheet was measured on every roll. The speed of the machine was determined by taking r.p.m. readings of the dryers every half hour. With this data, the gross production, the amount of water evaporated and the theoretical heat required were computed. All the data given in this report is referred to gross production. The test was run continuously from 9:00 a. m. until 4:30 p. m.

In order to make the various readings and tests, several men were employed. Their duties were as follows:

Two men made the condensate measurements.

One man read the steam pressure and temperature gauges every half hour.

One man took the dry and wet bulb thermometer readings out-of-doors, in the paper machine room and in the adjacent buildings.

One man took the anemometer readings of the air passing through the doorways and out the stacks.

Two men took the draft gauge and the dry and wet bulb thermometer readings at the various fans.

One man took the production records of the paper machines.

Two men took the moisture and weight samples.

One man took the speed of the fans and the power required by the motors driving the fans.

One man had general charge of the test.

Results

Data obtained or calculated is shown in tables following. Calculated results are given below but they are best shown by the charts. Fig. 3 is a diagram showing the location at which readings were taken for the steam tests. Fig. 4 shows where readings were taken for the air tests. Fig. 5 is a diagram of the air flow through the paper machine room in pounds per hour and may be considered as an air balance chart. Fig. 6 is a moisture balance chart and Fig. 7 is a heat balance chart.

We acknowledge the valuable assistance received from The Drying Systems, Inc., who advised us regarding methods of preparing for and making the tests.

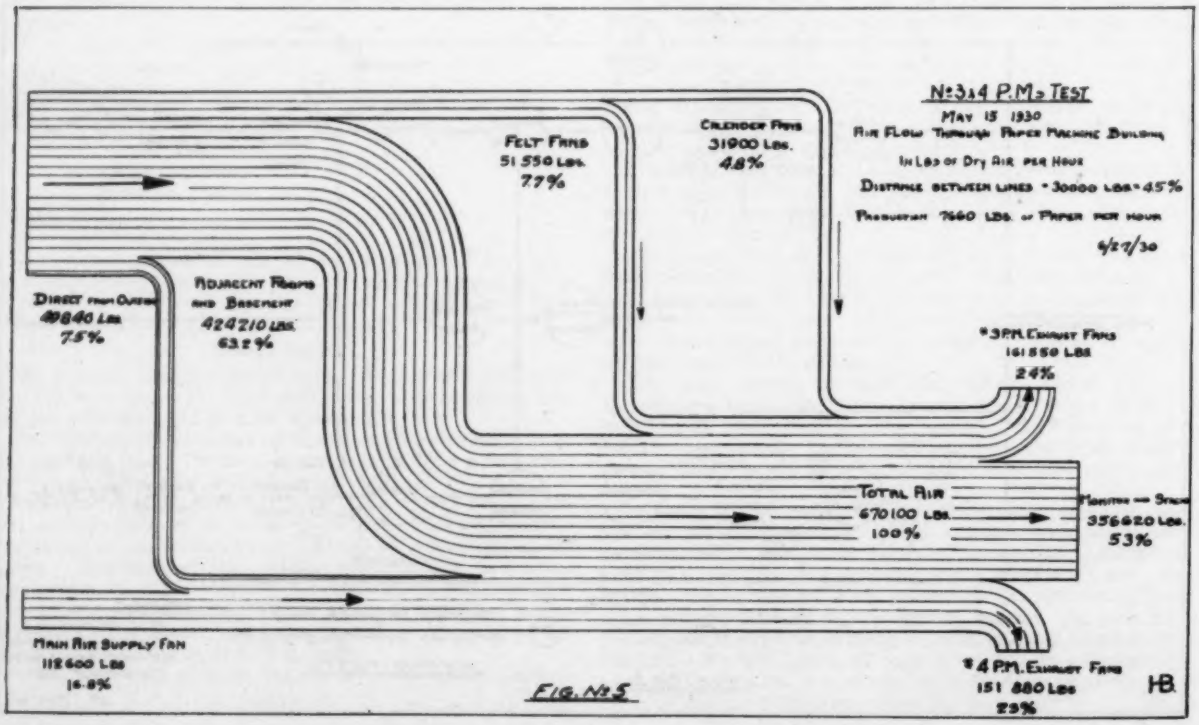


FIG. No 5

Air Exhaust Data

Paper Machine No. 4

	No. 1 Fan	No. 2 Fan	No. 3 Fan	Ridge	Stack
1. Dry bulb temp. ...	118	126	160	112	108
2. Wet bulb temp. ...	96	105	106	88	88
3. Specific volume ...	15.32	16.07	16.75	14.96	14.92
4. Cu. ft. per min. actual	8,900	15,600	18,000	4,900	1,370
5. Pounds humid air/ min. (4÷3)	583	970	1,075	328	92
6. Pounds water/ pound air	.0329	.045	.038	.023	.0238
7. Pounds water/ pound air pickup	.0253	.0374	.0304	.0154	.0162
8. B.t.u.'s/pound air referred to 32 deg. F.	55	69	72	43.5	41
9. Pounds water/min. (5×6)	18.5	41.5	40	7.3	2.2
10. B.t.u.'s pickup per pound of air ...	39.5	54.5	57.5	29.0	27.5
11. B.t.u.'s/min. (5×10)	22,900	50,000	62,000	9,500	2,500
12. B.t.u.'s/hour 1,375,000	3,000,000	3,720,000	570,000	150,000	
13. Total B.t.u.'s per hr. referred to 32 deg. F. 1,925,000	4,050,000	4,645,000	855,000	284,000	
14. Dewpoint deg. F..	92	101	97	81	82
15. Relative humidity per cent	44	48	18	38	46

Paper Machine No. 3

	No. 1 Fan	No. 2 Fan	No. 3 Fan	Ridge	Stack
1. Dry bulb temp. ...	120	131	122	109	116
2. Wet bulb temp. ...	97	105	97	96	88
3. Specific volume ...	15.41	16.0	15.45	15.16	15.06
4. Cu. ft. per min. actual	8,900	18,000	17,000	82,000	4,500
5. Pounds humid air/ min. (4÷3)	578	1,115	1,100	5,450	300
6. Pounds water/ pound air	.033	.0443	.033	.0376	.0208
7. Pounds water/ pound air pickup	.0254	.0367	.0254	.03	.0132
8. B.t.u.'s/pound air .	54	69.5	55.5	59	43
9. Pounds water/min. (5×6)	18.4	47.5	35.00	204	6.5
10. B.t.u.'s pickup per pound of air ...	39.5	55.0	41.0	44.5	28.5
11. B.t.u.'s/min. (5×10)	22,800	61,000	45,000	242,000	3,500
12. B.t.u.'s/hour 1,370,000	3,660,000	2,700,000	14,500,000	515,000	
13. B.t.u.'s / hour referred to 32 deg. F. 1,920,000	4,700,000	3,680,000	19,332,000	770,000	
14. Dewpoint deg. F...	92	101	92	93	80
15. Relative humidity per cent	43	42	40	62	33

Production Data

Paper Machine No. 3

Date: May 15, 1930 Time: 9:00 A.M. to 4:30 P.M.
Kind of paper:.....20 lb. (500—17x22) bond (100% sulphite)

Width of untrimmed sheet in inches.....	92.1
Speed of machine in feet per minute.....	471
Temperature of sheet entering dryers in deg. F.....	82
Per cent water in sheet leaving dryers.....	5.0
Per cent water in sheet entering dryers.....	68.4
Basic weight in pounds 500—17x22	20.28
Time paper was off dryer in minutes.....	12

Paper Machine No. 4

Date: May 15, 1930 Time: 9:00 A.M. to 4:30 P.M.
Kind of paper:.....20 lb. (500—17x22) bond (100% sulphite)

Width of untrimmed sheet in inches.....	119.34
Speed of machine in feet per minute.....	451
Temperature of sheet entering dryers in deg. F.....	85
Per cent water in sheet entering dryers.....	69.61
Per cent water in sheet leaving dryers.....	5.00
Basic weight in pounds 500—17x22.....	20.51
Time paper was off dryer in minutes	8

Air Supply Data

Paper Machines No. 3 and No. 4

By Fans	Volume C.F.M.	Lbs. air per hr.	Temp. to be raised deg. F.	Heat Transfer B.t.u.'s per hr.	Heat Transfer Lbs. stm. per hr.
Main supply fan 29,400	113,500	83	2,250,000	2,360	
Pit supply fan (No. 3 P.M.) 10,400	38,000	108	982,000	830	
Pit supply fan (No. 4 P.M.) 3,200	14,500	156	482,200	460	
Calender fan (No. 3 P.M.) 3,100	14,000	...	.....	....	
Calender fan (No. 4 P.M.) 3,980	18,130	...	.....	....	
Total supplied by fans. 50,080	218,130	...	3,714,200	3,650	
From Adjacent Rooms					
Beater room 17,700	76,500	...	.....	....	
Finishing room 40,700	179,360	...	.....	....	
Supercalender room 17,800	74,720	...	.....	....	
Basement 10,400	45,600	...	.....	....	
Total from rooms 86,600	376,180	...	.....	2,100	

Steam Data

1. **Paper Machine No. 3**
2. Date: May 15, 1930 Time: 9:00A.M. to 4:15P.M.
3. Steam supply—pounds gage ..10.6 Temp. deg F..... 274
4. Quality .....33 deg. S.H. B.t.u.'s per pound 1,177
5. Condensate temp. deg. F.....217 B.t.u.'s per pound 185
6. B.t.u.'s per lb. of steam delivered by dryers (4)—(5) .992
7. Pounds water per hour by condensate meter..... 8,725
8. Pounds water per hour by vacuum pump meter..... 410
9. Total pounds of condensate by dryers per hour (7)+(8) 9,135
10. Temperature of cooling water for vacuum pump deg. F. 62
11. Pounds condensate per hour equivalent to heat supplied by dryer pit supply heater (from heater data). 1.060
12. Pounds condensate per hour by dryers and pit supply heater (9)+(11) 10,195
13. B.t.u.'s delivered per hour by pit supply heater (See Note) 1,110,000
14. B.t.u.'s delivered per hour by dryers (9)×(6) 9,060,000

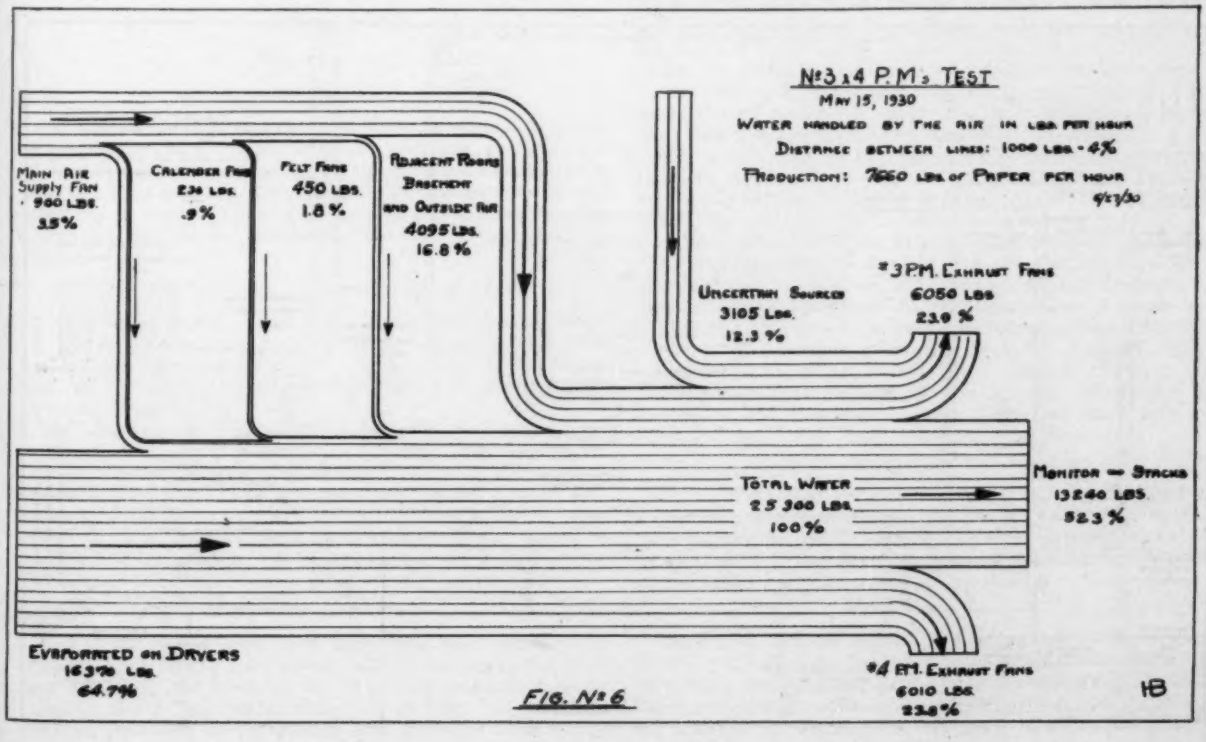

No 3 & 4 P.M.'s TEST
MAY 15, 1930
WATER HANDLED BY THE AIR IN LBS PER HOUR
DISTANCE BETWEEN LINES: 1000 LBS = 4%
PRODUCTION: 7650 LBS OF PAPER PER HOUR
9/23/30
MAIN AIR SUPPLY FAN 900 LBS. 3.5%
CALENDER FANS 236 LBS. .9%
FELT FANS 450 LBS. 1.8%
ADJACENT ROOMS BASEMENT AND OUTSIDE AIR 4095 LBS. 16.8%
UNCERTAIN SOURCES 3105 LBS. 12.3%
#3 P.M. EXHAUST FANS 6050 LBS 23.9%
TOTAL WATER 25300 LBS. 100%
MONITOR — STACKS 13240 LBS 52.3%
EVAPORATED ON DRYERS 16370 LBS. 64.7%
#4 P.M. EXHAUST FANS 6010 LBS. 23.8%
18

FIG. No 6

15. B.t.u.'s delivered per hour by dryers and heater (13)+(14)	10,170,000
16. B.t.u.'s delivered per hour by main supply fan (See note)	972,000
17. B.t.u.'s delivered by adjacent rooms (See note)	800,000
18. Total B.t.u.'s delivered per hour to machine room (15)+(16)+(17)	11,942,000

Note: Referred to outside temperature of 58 deg. F.

1. Paper Machine No. 4

2. Date: May 15, 1930		Time: 9:00A.M. to 4:15P.M.	
3. Steam supply—pounds gage	10.6	Temp. deg. F.	240
4. Quality	saturated	B.t.u.'s per pound	1,161
5. Condensate temp. deg. F.	216	B.t.u.'s per pound	184
6. B.t.u.'s per pound of steam delivered by dryers (4)—(5)			977
7. Pounds water per hour by condensate meter			10,200
8. Pounds water per hour by vacuum pump meter			545
9. Total pounds of condensate by dryers per hour (7)+(8)			10,745
10. Temperature of cooling water for vacuum pump deg. F.			62
11. Pounds condensate per hour equivalent to heat supplied by dryer pit supply (from heater data)			460
12. Pounds condensate per hour by dryers and pit supply heater (9)+(11)			11,205
13. B.t.u.'s delivered per hour by pit supply heater (See note)			430,000
14. B.t.u.'s delivered per hour by dryers (9)×(6)			10,500,000
15. B.t.u.'s delivered per hour by dryers and heater (13)+(14)			10,930,000
16. B.t.u.'s delivered per hour by main supply fan (See note)			1,280,000
17. B.t.u.'s delivered per hour by adjacent rooms (See note)			1,068,000
18. Total B.t.u.'s delivered per hour to machine room (15)+(16)+(17)			13,278,000

Note: Referred to outside temperature of 58 deg. F.

Results

Note: Refer to charts for more complete results.

Paper Machine No. 3

Date: May 15, 1930	Time: 9:00 A.M. to 4:15 P.M.
Kind of paper	20 pound sulphite bond (500—17x22 basis)
Pounds paper dried per hour	3400
Pounds water evaporated per pound paper	2.1
Pounds water evaporated per hour	7120
Pounds steam used in dryers per pound paper	2.69
Pounds steam used in heaters per pound paper	.85
Pounds steam used in dryers per pound water evaporated	1.29
*Pounds steam used in heaters per pound water evaporated	.41
Total pounds steam used per pound water evaporated	1.70
B.t.u.'s absorbed in dryers per pound water evaporated	1270
*B.t.u.'s absorbed in heaters per pound water evaporated	406
Total B.t.u.'s absorbed per pound water evaporated	1676
Theoretical B.t.u.'s required per pound water evaporated	1100
Thermal efficiency of drying operation in per cent (See note **)	65
Total area of dryer surface in square feet	3420
Effective area of dryer surface in square feet	2400
Pounds of water evaporated per square foot of total area	2.08
Pounds of water evaporated per square foot of effective area	2.97
Pounds of paper dried per square foot of total area	.95
Pounds of paper dried per square foot of effective area	1.42

Paper Machine No. 4

Date: May 15, 1930	Time: 9:00 A.M. to 4:15 P.M.
Kind of paper:	20 pound sulphite bond (500—17x22 basis)
Pounds paper dried per hour	4260
Pounds water evaporated per pound paper	2.17
Pounds water evaporated per hour	9250
Pounds steam used in dryers per pound paper	2.52
Pounds steam used in heaters per pound paper	.75
Pounds steam used in dryers per pound water evaporated	1.15
*Pounds steam used in heaters per pound water evaporated	.31
Total pounds steam used per pound water evaporated	1.46
B.t.u.'s absorbed in dryers per pound water evaporated	1130
*B.t.u.'s absorbed in heaters per pound water evaporated	306
Total B.t.u.'s absorbed per pound water evaporated	1436
Theoretical B.t.u.'s required per pound water evaporated	1075
Thermal efficiency of drying operation in per cent (See note **)	75
Total area of dryer surface in square feet	4350
Effective area of dryer surface in square feet	2920
Pounds of water evaporated per square foot of total area	2.13
Pounds of water evaporated per square foot of effective area	3.17
Pounds of paper dried per square foot of total area	.97
Pounds of paper dried per square foot of effective area	1.46

* Includes dryer pit supply heater, room air supply heater and air from adjacent rooms.

** The thermal efficiency of drying operation is given as 65.5 per cent for No. 3 machine and 75 per cent for No. 4 machine. All the heat which was supplied and could be measured or calculated was taken into consideration in obtaining these efficiencies. The heat balance shows, however, that 10.7 per cent more heat left the paper machine room than the measured supply. If we use the quantities of outgoing heat to calculate the efficiencies, we obtain 60 per cent for No. 3 paper machine and 70 per cent for No. 4 paper machine.

The Boiler Engineering Co., Newark, N. J., manufacturer of Beco-Turner baffle as well as the Turner baffle, announces its affiliation with the Plibrico Jointless Firebrick Co. of Chicago, manufacturer of Plibrico Furnace Lining. The Boiler Engineering Co. will continue to maintain headquarters at Newark. All inquiries should be addressed to the Newark offices or to the various local Plibrico representatives. The main offices of the Plibrico Jointless Firebrick Co. will remain in Chicago.

George M. Norman, technical director of the Hercules Powder Co., Wilmington, Dela., and A. B. Nixon, general manager, cellulose products department, are en route to Europe where Mr. Norman will attend the International Cellulose conference at Liege, Belgium, and Mr. Nixon will survey the market for American collodion cotton in Germany and other countries.

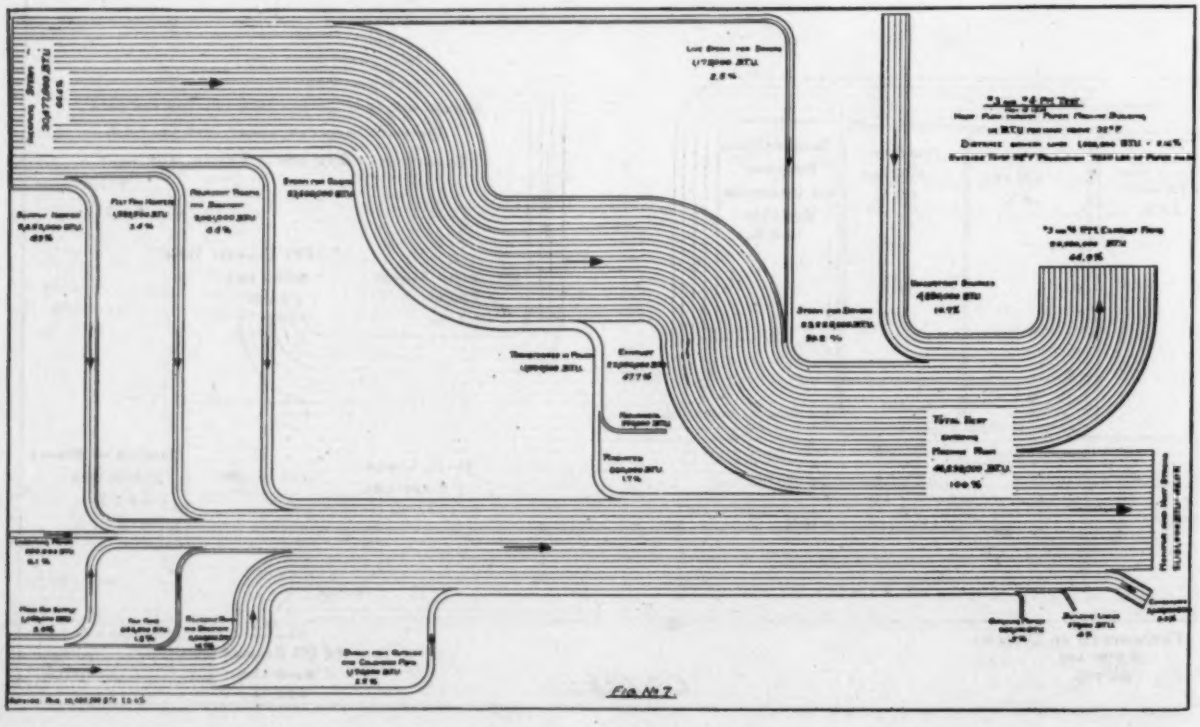


Fig. No 7.

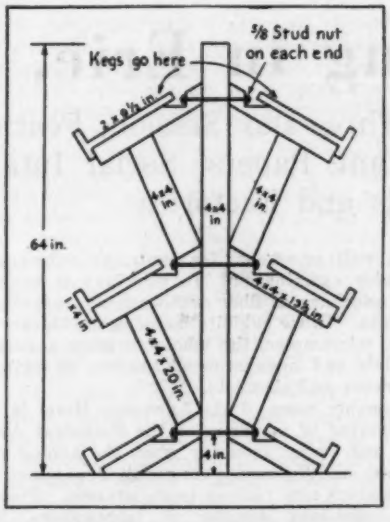
Practical Helps for the Mill Man

Stores Material Rack

A RACK of interesting design for storing kegs of studs, nuts, bolts, etc. was described in the May, 1930 issue of **Factory and Industrial Management** by E. T. Nichols of Three Rivers, Michigan.

The rack as described is 20 feet long, has five cross-sections, and will accommodate 96 kegs. Details of construction may be obtained from a study of the accompanying elevation sketch.

A small placard, showing the size of the material in a keg, is attached to the keg at the time of placing it upon the



rack. When the keg has been emptied, it is simply necessary to remove it, knock out the head of a new keg, exchange the placard from the discarded keg to the new one, and place the new keg into position. Such a rack eliminates unnecessary jamming of threads, permits an orderly arrangement of such stores material in the stockroom, and affords excellent inventory control.

A Top Press Roll Compensating Drive

THERE has recently been developed at the Franklin Board and Paper Company, Franklin, Ohio, a compensating drive for driving top press rolls. The device is to be marketed and sold by the Shartle Brothers Machine Company, at Middletown, Ohio.

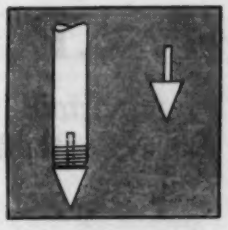
Mr. Gleason, superintendent of the mill, claims excellent results from the use of this device stating that on his last primary press, previous to installing this device, the top roll showed a slippage of ⅞-inch per r.p.m. of the bottom roll. After its installation, the slippage of the top press roll was cut down to an almost negligible quantity—careful measurements showing a slippage of 56 inches in every 22,296 inches. This, of course, effected a marked saving in felt costs, this being cut from $1.63 per ton to $1.37, or a total of $19.50 per day.

Due to not having such tight draws, the sheet widened out enabling them to get a wider trim and also keeping the felts open all during the week, so that it is very seldom necessary to move the press weights in. This in turn has meant a material reduction in wet streaks and therefore evener drying. Mr. Gleason states on heavy weights they have dropped their pressure from five to ten pounds. He also states that they have not sewed a felt since they installed it.

This device has proven so successful that they have now installed it on their fifth primary and on their third main, and are also installing it on their first where it is felt that material advantage will be gained due to their press running bare.

Bolt Hole Aligner

A SIMPLE little device for aligning holes to insert bolts through two or more pieces of metal or wood was described in the June 1930 issue of **Factory and Industrial Management**. The device consists of a small cone, equal in its largest diametrical dimension to the size of the bolt to be driven.



The cone is fitted with a short stem which is inserted in a small hole drilled in the end of the bolt to receive it. With the aligner in position the bolt can be driven. The cone automatically aligns the holes ahead of the bolt end. After the bolt has been driven into position, the cone aligner is removed and saved for the next emergency.

Subject for Simonds 1930 Contest Announced

Announcement has been made that the subject of the Alvan T. Simonds Ninth Annual Economic Contest for 1930 will be "Government Interference with the Free Play of Economic Forces."

One thousand dollars is to be awarded the essay decided by the judges to be the best, and five hundred dollars for the essay chosen as the next best. The contest is open to everybody everywhere, and closes December 31, 1930.

The essays may be as long or as short as the contestant chooses; they must be original and not previously published and must not be published or used in any similar contest before the prizes in the contest are awarded.

In the 1929 contest, the prize-winning essay on the subject "The Federal Reserve System and the Control of Credit," was written by Walter Earl Spahr, Ph.D., Professor of Economics and Chairman of the Department of Economics, School of Commerce, Accounts and Finance, New York University. The second prize was awarded Ivan W. Elder, managing editor of the North Pacific Banker, Portland, Ore.

Communications concerning the contest should be addressed to the Economic Contest Editor, Simonds Saw and Steel Company, 470 Main St., Fitchburg, Mass.

H. L. Wernicke, chemist and scientist, and credited inventor of the sectional bookcase, passed away August 30 at Pensacola, Fla., at the age of 69 years. Mr. Wernicke was an organizer of the Pine Institute of America and was one of the first men to manufacture wood pulp in the South.

Charles C. Phelps, manufacturers' agent, 11 Park Place, New York, has been appointed sales agent for metropolitan New York and northern New Jersey, by the Leavitt Machine Company, Orange, Mass., to handle the Dexter valve reseating machine for globe, gate and pump valves.

Group picture taken at fall meeting of the Technical Association of the Pulp and Paper Industry in front

T.A.P.P.I. Fall Meeting in Erie, Pa.

Hammermill and G. E. Hosts at Crowded Three-Day Session, Featured by Large Attendance for Discussion of Important Papers, Social Intercourse and Informing Visits to Mills and Factories

THE fall meeting of the Technical Association of the Pulp and Paper Industry at Erie, Pa., on Wednesday, Thursday and Friday, September 3, 4, and 5, 1930, brought pleasant memories to many of the older members of a delightful Spring Meeting which began in Erie on June 11, 1919, and continued with business sessions and a banquet at Buffalo, N. Y., on June 12, a trip to Niagara Falls for visits to American mills and plants on June 13, and ended on the fourth day with trips to Thorold and St. Catharine, Ont., as guests of the pulp and paper manufacturers of the Niagara Peninsula. As on the present occasion, visits were made on the first day of meeting to the Erie plant of the General Electric Company where the visitors were entertained at luncheon and to the Hammermill Paper Company's mill, winding up with a banquet at Hotel Lawrence as guests of Hammermill Paper Company. Reference to this was made by Henry F. Obermanns at the dinner tendered the association on the second day of the present fall meeting.

The hospitality of the manufacturers of Erie knew no bounds and no more enjoyable fall meeting of the Technical Association has ever been held than that which drew to a close late on Friday evening, September 5, with a social gathering at Presque Isle, where a fish fry, a great local treat, was served to upwards of 200 members and guests. Fitting recognition of this was made by a member of the executive committee of T.A.P.P.I. at the big banquet on Thursday evening.

The arrangements for the meeting were in the hands of the heads of departments of the Hammermill Paper Company who were tireless in their efforts to provide for the comfort and entertainment of visitors. In addition to a lengthy program of scientific papers and discussions, there were exhibits of great educational and industrial interest in outer rooms of the assembly hall and these were inspected with much interest by all present. The exhibits included electric color analyzing and color matching apparatus, which were the subject of papers read at the meeting. Laboratory apparatus and chemicals were also on display, one of remarkable interest being the Promi microscope, marketed by the Fidalgo Drying Systems, New York. Unlike ordinary microscopes this apparatus can be used as a projector to throw against a wall or screen, for study, an enlargement of the object under examination. In this way it can be used to project a specimen of fiber or fibers, say, magnified as many as 200 times. Other exhibits included the Gurley densometer and sheet micrometer, the whole forming a notable display of materials and apparatus of interest to pulp and paper mill engineers and chemists.

The assembly room of the Lawrence Hotel in Erie held a large gathering of members of the Technical Association of the Pulp and Paper Industry when the annual fall meeting was opened on Wednesday morning September 3, upwards of 150 members and visitors being present. President M. A. Krimmel, assistant director of laboratories, Hammermill Paper Company, brought his gavel down as the signal for the meeting to come to order at half past ten o'clock. He made a neat speech of welcome, expressive at the same time of the pleasure he felt at being in a position to open such a meeting in his home town. He was not certain, he said, if it was an asset or a liability to hold meetings in the home town of the president of the association. It had been suggested that the mayor of the city should be present to welcome the visitors, but all such details had been left to the local committee, it being the custom at fall meetings to leave affairs in the hands of local members. He called upon Henry F. Obermanns one of the founders of the Technical Association of the Pulp and Paper Industry and a former vice-president to address the gathering.

Mr. Obermanns supplemented the hearty welcome to Erie extended by Mr. Krimmel and outlined the arrangements that had been made for the comfort and entertainment of the visiting members. He called attention to some interesting exhibits of local manufacturers and others, and announced that members would be welcome to visit the plants of the Skinner Engine Company, the Erie City Iron Works, the Union Iron Works, the Northern Equipment Company, the Heisler Locomotive Works and the Erie Malleable Iron Works in Erie at any time during the period of the convention.

Articles of Organization for Local Sections

Before proceeding with the regular order of business, President Krimmel said that if any committee chairman desired to speak on any subject he would be heard with pleasure.

in front of laboratory building of Hammermill Paper Company, Erie, Pa., September 3, 4 and 5, 1930.

There being no response, certain proposed changes in the articles of organization of the association calculated to provide more effectively for the establishment of local sections were brought up for consideration and adopted unanimously. The gist of the changes consist of the substitution of the word "three" for "five" in Section 1 of Article X, by which the formation of local sections may be authorized following the written petition of three members in a given locality; a provision that officers of the sections shall be members of the parent organization; and provision for paying the operating expenses of local sections, such expenses will be defrayed to the amount of 10 per cent of the membership dues of Technical Association members in any section. Accompanying the text of the proposed changes was an outline of articles of organization of a section.

The proposed amendments were put to a vote of the meeting and were carried without dissent.

Resistance of Papers to Moisture

Following the adoption of the proposed changes in articles of organization, Allen Abrams, technical director, Marathon Paper Mills Company, was asked to present a paper on "Vapor Transmission Through Papers," which he had prepared in collaboration with Warren A. Chilson. This was one of the papers of which preprints were not available. By means of large charts, Mr. Abrams gave a clear and interesting account of researches which he had made with a view of determining the resistance of papers to the penetration of water vapor. He began by calling attention to the increasing use of paper for wrapping such stuffs as bread, cake, crackers, cigars, cigarettes, or other forms of tobacco. Recognition of the fact that moisture content is very important in maintaining the proper condition of certain foods had made it necessary, he said, to develop a method of determining the transmission rate of moisture through paper. Water vapor transmission is largely affected by temperature and humidity. A tentative method suggested by him was to expose the paper to vapor at a fixed temperature and with a definite vapor pressure differential, the loss in weight over a certain period being computed to grams per 100 square inch per 24 hours. The rate of passage of air through papers does not appear to bear any direct relation to the passage of water vapor through the same sheets.

Method of Testing—Briefly stated, Mr. Abrams' method for simple and reliable determination of the resistance of papers to the penetration of water vapor consists of exposing the sheets to water vapor for a definite period of time, with saturated air on one side of the sheet and a definite, lower humidity on the other side. A controlled room was used for the experiments, the room being equipped with dessicators, recording thermometer, indicating hygrometer, electric fans and an anemometer, together with proper arrangements for the exposure of wrapped products such as bread, cake, crackers and tobacco.

A light can was used for holding the sheet conveniently while exposed to water vapor. The can had a separable, flanged ring, by which the sheet could be fastened firmly by means of knurled brass screws, so as to expose 7.07 sq. in. of surface to the water vapor. Check cans were used for each test. By weighing the can before and after exposure, the result could be calculated over to an arbitrary basis of water vapor transmission in grams per 100 sq. in. per 24 hours.

A wide range of papers was tested, including cellulose acetate, bleached sulphite, glassine, dry waxed sulphite, wet waxed sulphite, cellophane and rubber sheeting (dental dam). A nonmoisture proof cellulose acetate sheet, which has a relatively high transmission rate and is yet fairly resistant to water, was used in carrying out investigations of factors affecting the method. The tests were made in a room with 50 per cent humidity.

Authors' Conclusions—The authors' conclusions were stated as follows:

1—The rate of water vapor passage through papers is largely dependent on the vapor pressure "potential" (i.e. the difference in vapor pressure) on the two sides of the paper. In turn, this difference in pressure is largely dependent on the temperature and humidity under which the test is carried out. These conditions, therefore, require very careful regulation if dependable results are to be obtained.

2—Testing vapor transmission under vacuum appears to offer some simplification of equipment but at the same time the shorter test periods involve a lower degree of accuracy in results, particularly with sheets of high moisture-proofness.

3—The suggested tentative standard method gives results which are directly comparable with the results of moisture losses in actual packaging experiments using the same papers.

4—The ratio between water vapor loss from an open can and from a can covered with paper is not constant under varying test conditions; therefore this simple method cannot be adopted for standard usage.

5—Water vapor transmission rates bear a direct relation to liquid water penetration tests on homogeneous papers, but this relation does not hold good for heterogeneous papers.

Mr. Abrams defined "wet waxed paper" as a sheet in which a layer of wax is left on the surface. He considers this to be a heterogeneous sheet, a dry waxed sheet being said to be homogeneous. Similarly, moistureproof cellophane was said to be nonhomogeneous, because it consists of films of different composition.

Discussion by Members

In reply to a question by R. C. Griffin, Arthur D. Little, Inc., Mr. Abrams said he had detected a notable difference in the two sides of many papers.

A. J. Luth, Nekoosa-Edwards Paper Company, asked if Mr. Abrams had noticed any correlation between the densomoter test and the paper test with liquids other than water, mentioning carbon tetrachloride, chloroform, etc. Mr. Abrams said he had not noticed any difference, and Mr. Luth observed that in his work in the laboratory of the Nekoosa-Edwards Paper Comapny such a correlation had been noted.

Determination of pH Values and Total Acidity in Paper

A progress report on the determination of pH values and total acidity in paper was presented in abstract form by the author, B. L. Wehmhoff, technical director, Government Printing Office. The report was stated to be based on co-operative research conducted by the Paper Section of the Bureau of Standards, Department of Commerce; the Bureau of Chemistry and Soils, Department of Agriculture; and the Division of Tests and Technical Control, Government Printing Office.

Wide Variations in Test Results—Details of the papers examined and the operative procedure were given. The samples selected for study consisted of 100 per cent rag ledger, 100 per cent rag machine-finish book, 50 per cent rag machine-finish book, sulphite bond, kraft wrapping, and newsprint. Five duplicate sets of these papers were used for co-operative testing work, but the report covered only the work done by the three government laboratories. pH determinations were made by the hydrogen electrode, quinhydrone electrode, Fawcett-Acree isohydric indicator and commercial colorimetric methods. In addition, determinations were made on two samples by means of the glass electrode. A tabulated comparison of results by the various methods was included in the report and revealed a somewhat wide range of acidity in the several kinds of paper tested. Thus with 100 per cent rag ledger, the Hygienic Laboratory of the Public Health Service found 4.91, the Government Printing Office 5.00, Bureau of Chemistry and Soils 4.95 and 4.85, and the Bureau of Standards 4.75, the respective methods relating to these figures being hydrogen electrode, quinhydrone electrode and isohydric indicator. On 50 per cent rag M. F. Book, the Bureau of Standards got a pH value of 5.14; the Government Printing Office and the Bureau of Chemistry and Soils got 4.69 and 4.63 respectively using a quinhydrone electrode; with an isohydric indicator on the same paper, the Bureau of Chemistry and Soils got 4.60 and the Bureau of Standards 5.20. Not so much variation in readings by the different methods was found with kraft wrapping, but newsprint gave a reading of 5.50 acidity with the isohydric indicator at the Bureau of Standards, and 4.50 at the Bureau of Chemistry and Soils.

It was thought that the methods of extracting the papers influenced results. The extractions of the Bureau of Standards were made at 98 deg. Cent. on a water bath, while the others were made by boiling at 100 deg. Cent. on an electric hot plate. In view of the varying results obtained by the different laboratories under slightly different extracting conditions, further work must be done to determine the cause of such variations. A fresh extract of paper gave different results from an extract that had stood for three weeks. The variation in pH values consequent on lapse of time between extraction and determination was particularly noticeable in glue sized papers. The study is to be continued and a final report made later.

Titration Tests of Rag Paper Manufacturers

Jessie E. Minor, chairman of the Fibrous Raw Materials Committee was called upon to discuss the report and she gave an outline of the work done at the laboratories of the Rag Content Paper Manufacturers, Springfield, Mass., in an effort to establish a method of determining paper acidity as well as to answer the question: How is acidity related to paper permanence? Titration tests were used to the end point with phenolphthalein, precautions being taken previously to sweep out all traces of carbon dioxide gas. The relation of titration acidity to pH acidity was studied. As the paper ages, the titratable reaction was not so positive. The relation of pH of finished paper to the pH of stock at the head box was also studied. Miss Minor said she was curious to know how many of those present had made this comparison between finished paper and stuff at the head box. R. C. Griffin said that for purposes of control the pH value of the stuff at the head box was a surer way of determining acidity than by an extraction of paper.

Reaction of Kraft Paper

Mr. Luth said he had tried to correlate pH values of stuff at the head box and finished papers but without satisfactory results. He used a gram of finished paper to 100 cc. of mill water. He made the interesting observation that fresh kraft paper had a pH value of 6 but a change took place on standing, the paper becoming nearly neutral.

A Suggestion by Mr. Williams

F. M. Williams, Williams Apparatus Company, was impressed with the interesting character of the discussion and particularly in Miss Minor's work in determining relative acidity. He asked if it would not be best to make a quick sheet of paper at the head box instead of using a suspension of fibers from the box. It would be much superior so far as results were concerned to the use of finished paper.

Paper No. 3, "Color Matchings with the Colorscope," was demonstrated by W. A. Schneider in the absence of H. H. Sheldon, the electrical apparatus being operated by Milton Gluck, co-author with Professor Sheldon.

Apparatus for Matching Colors

The colorscope described in the paper by H. H. Sheldon and Milton Gluck affords a means of determining whether two samples of colors matched or how far apart they were in terms of commercial shades. The instrument does not, however, give a numerical value to the colors under examination and Professor Sheldon was careful to state that the colorscope was not a color analyzer, that is, it does not produce an analytical curve. He stated that the colorscope was based upon the ability of a photoelectric cell to differentiate light both as to color and intensity and to cause a corresponding electrical response through suitable electrical circuits. The applications of the instrument were said to be numerous. The relative whiteness of white paper, blue paper, browns or other colors can be determined by the instrument and result in a proper grading. A determination of the color regions in which samples differ can be made by placing suitable color filters before the photoelectric cell. These may consist of standard color filters, or special filters composed of dye solutions made up to meet a special problem.

Caesium is the element which is used to coat the photoelectric cell. On exposure to light this element gives off particles or ions. The demonstration was a most interesting one. The deflections of the galvanometer were communicated to a projectoscope equipped with a mirror, and, the room being darkened, the oscillations of the galvanometer were indicated on a screen back of the platform by a moving small beam of mirrored light which swung to left and right of a point which indicated zero. A paper under examination which was darker than the original sample swung the beam to the right while shades lighter than the sample deflected the ray to the left, these deflections being comparable with the movements of the galvanometer indicator.

This brought the business sitting to a close. Henry F. Obermanns, general chairman of the convention committee, announced that buses would leave at 12:45 p.m. for an inspection trip of the Erie works of the General Electric Company return to the hotel, buses would be provided to take members where a complimentary luncheon would be served, and on the to the Erie pier for a boat trip to Port Dover, Ontario.

Visit to Erie Plant of General Electric Company

Soon after arrival at the extensive plant of the General Electric Company, situated some four miles north of the city, the visiting members were escorted to the cafeteria or dining hall where an excellent luncheon was served, covers being laid for 250 persons. Everybody was impressed with the order, neatness and cleanliness that prevailed. The chief article of the repast was a Delmonico steak served piping hot and there were side dishes of vegetables, followed by dessert, coffee and cigars.

In groups of ten the party was conducted by guides through all parts of the huge establishment which covers so much

ground as to be a city in itself, with its own system of police, fire and street cleaning service. The visitors were first taken through the plant where transformers are manufactured. Every stage in the work of building transformers, from the casings to the finished article were shown. Great interest was taken in the various steps involved in the manufacture of G. E. refrigerator cabinets, beginning with the work of cutting out the metal sides and the lacquering and enameling of them. In process of construction, the visitors witnessed the assembly of a large line of motors and generator sets, besides car and locomotive equipment, railway locomotives and oil-electric, gas-electric and storage-battery locomotives, in addition to industrial, mine, surface, battery, gathering, truck and pusher locomotives. Every courtesy and attention was shown the visitors and all left with heightened feelings of admiration for the accomplishments of the company, the courtesy of executives and the evident splendid morale of the working staff. It was a visit that was greatly enjoyed by everyone.

Enjoyable Boat Ride on Lake Erie

The entertainment features of the day closed with a boat trip across Lake Erie to Port Dover on the Canadian shore. The party did not disembark as the boat stopped only long enough to take on passengers and cargo and immediately turned around in the direction of Erie. The trip was enlivened by dancing, card playing and other amusements. Dinner was served on the boat shortly after it headed out in the direction of Port Dover. A breeze sprang up when half way across the lake which made some of the passengers uncomfortable as the boat pitched and tossed in the swell. Some of the passengers experienced qualms of seasickness, though none of the T.A.P.P.I. members would confess to it, and as there were some regular commuters aboard, who make the trip regularly between Port Dover and Erie the case could not be proved. The trip occupied nearly four hours in each direction. So wide is the lake at this point that no land could be seen. The visitors were treated to a glorious sunset on the way over, the great red disk magnified by mist sinking in the west with a splendor seldom seen.

THURSDAY'S SITTING

Following announcements by Mr. Obermanns for the committee of arrangements, the reading of papers was taken up.

Evaluation of European Pulps

In a preliminary report for the Pulp Testing Committee, Warren F. Moore and William R. Willets gave strength data for twenty-one brands of European pulps, as determined in the laboratories of the United States Testing Company, New York. The methods of analysis were outlined. Sulphate and sulphite pulp were tested. The method of determining alpha cellulose content consisted of treating 5 grams of air-dried pulp with 75 cc. of 17.5 per cent caustic soda at 28 deg. Cent. The sample was torn into small pieces, macerated with the alkali for five minutes and then allowed to stand for an additional twenty-five minutes, making a total mercerizing period of thirty minutes. The pulp was then filtered through a Buchner funnel three times to prevent fiber loss, and washed with 500 cc. of warm distilled water using suction, followed by a treatment with 50 cc. of 10 per cent acetic acid (without suction). The pulp was then washed with an additional 250 cc. of warm distilled water. To facilitate drying, 50 cc. of alcohol and petrolic either were used successively after the final washing out of the acid. The pulp was then dried to constant weight in a tared weighing bottle.

Most of the data presented related to physical tests, though in a few cases chemical analyses of the sulphite pulps were given. It was noted in a "Summary and Conclusion" by the authors that the 1½ pound controlled bedplate beater as recommended in the new T.A.P.P.I. tentative standard beater method was found to be relatively unsatisfactory where complete testing data were desired.

Discussion of Pulp Evaluation Method

In the discussion which followed some dissatisfaction found expression concerning the T.A.P.P.I. standard method for testing pulp, one of the faults found with it being the size of the beater used for experimental work. This cropped out at different times.

C. E. Peterson, Rap-in-wax Company, St. Paul, Minn., asked Mr. Willet if he had been able to obtain any correlation between the experimental beater and mill beaters.

E. G. Ham, John A. Manning Paper Company, called attention to an apparent defect in the T.A.P.P.I. standard testing methods and asked if it were true that circulation in the experimental beater stopped before the beating test was completed. He had found that the standard method would not work on kraft or on unbleached sulphite pulp.

Mr. Willets replied to Mr. Ham by saying that after the fifth sample had been removed, 82.5 of the volume remained in the beater, which retarded circulation in certain cases to such an extent that beating did virtually cease.

R. H. Stevens, Bogalusa Paper Company, said he was glad to note that a prediction made by him last year had been verified. By taking out samples at such frequent intervals as was prescribed by the T.A.P.P.I. standard testing methods circulation in the beater was impaired. He suggested watching the development only by slowness tests during the first stages, conserving the stock for final tests when the beating was nearly completed.

A member remarked that the trouble came about through the use of the 1½ lb. beater. There was no trouble of this kind when a 5 lb. beater was employed.

Mr. Stevens said the sheets made according to mill practice and in the experimental beating compared fairly well, which led C. R. Swett to ask in what manner they compared, and Mr. Stevens replied, as to burst and tear.

The next paper to be called for was entitled "British Standard Method of Sheet Making and Testing" and evoked a lively discussion.

British Standard Method of Sheetmaking and Testing

In the contribution by James d'A. Clark, development engineer of the Mead Corporation, an outline was given of the events leading to the adoption of the British standard methods both of test sheetmaking and determining the initial strength of pulp. The outstanding differences between these methods and those tentatively suggested by T.A.P.P.I. and the Canadian committees came in for discussion, including disintegration, dilution, pressing, testing of the sheets and their substance. Mr. Clark said it had been demonstrated that as far as hydration of cellulose by pressure was concerned, a momentary dynamic pressure of 500 to 600 lb. per square inch given to the wet sheet by the press rolls in a paper machine was no more than equivalent to a static pressure of 50 lb. per square inch. Consequently pressures of upwards of 50 lb. per square inch were greatly in excess of the effect of pressures in practice. He said that the recommended pressure of 200 lb. per square inch in the tentative American method had no real justification apart from work done by Cameron and reported in the Pulp and Paper Magazine of Canada, Feb. 1, 1923 and Jan. 7, 1926, and his results did not apply to the procedure outlined in the British method.

Mr. Clark commented on the need for a beating apparatus which would give sufficiently accurate results for a precision test. He defined a precision beating apparatus as one which would progressively hydrate or bruise the fibers of pulp in contact with water in a perfectly positive and definite manner. The requirements of a precision beating apparatus were outlined. According to Mr. Clark, the ideal pulp test should consist of the complete initial strength test and a limited number of tests, including the rate of drainage, made on a few sheets produced from a definite quantity of pulp withdrawn from the beating apparatus at, say, one-quarter and one-half beating period, and finally the entire range of test made on the remainder of the stock after beating has been completed. The stock when completely beaten should be sufficiently hydrated for making a greaseproof paper.

Mr. Clark demonstrated the manufacture of a round sheet of paper 6¼ inches in diameter from a pulp suspension of 24 grams of bone-dry stock which had been disintegrated at 1.2 per cent consistence and diluted to 0.0172 per cent before being drained and formed into a sheet. A working set of the apparatus officially adopted by the Paper Makers' Association of Great Britain and Ireland for the beating and

testing of pulp and conversion into sheets was exhibited on the platform and used by Mr. Clark in his demonstration. Similar sets of apparatus have been supplied to the Finnish, Swedish and Norwegian laboratories and pulp mills, as well as to mills in seven other countries, including the United States and Canada. There was a disintegrator capable of being operated either by belt drive or a direct coupled motor to insure a uniform speed of stock propeller of 3,000 r.p.m. Preliminary disintegration is specified at 75,000 revolutions of the propeller, there being 24 grams of bone-dry stock in the container at 1.2 per cent consistence, as stated.

The sheet machine of round design was said to offer a cheaper and more accurate construction than a square one, an observation which was questioned later on in the discussion by F. M. Williams, of the Williams Apparatus Company, whose apparatus makes a rectangular sheet.

An interesting point brought out by Mr. Clark that the substance of the test sheets made by the British sheet machine (60 gm. per square meter = 42.7 lb. 25 × 40—500), about 1/6 of the recommended substance in the T.A.P.P.I. standard methods, approximated the substance of paper in common use, while the T.A.P.P.I. sheet of 125 lb. 25 × 40—500, resembled a wad of pulp more than a sheet of paper and it would be almost impossible to make such a thick sheet from stock that had been prepared for a greaseproof paper.

Used as a Freeness Tester—It was further observed by Mr. Clark that the rate of drainage of the sheet when made under standard conditions afforded an index of its true freeness, that is, its rate of drainage on the paper machine wire. In fact several mills using the apparatus have discarded all their usual freeness instruments in favor of this test, he said. To illustrate, he said that a sulphite beaten to a greaseproof stock, and a fairly course groundwood gave similar figures when tested by the Schopper-Riegler, or the Canadian types of freeness tester, whereas on the sheet machine the drainage of the same groundwood would be about 15 seconds, and the greaseproof stock about 3 minutes.

Much interest was taken in the method of drying as demonstrated by Mr. Clark. The use of mirror polished stainless-steel disks and drying rings was said to cause the sheets to stretch while drying, as paper does when passing through the dryers of a paper machine.

Criticism of the Method—Chief discussion of the paper was made by F. M. Williams who objected at the start to the circular shape of the test sheet as well as its size, his contention being that a sheet of square or rectangular form would be easier to file for reference. He called attention to the paper by Davis and Simerl in the preprints and argued for the use of a freeness tester. He thought well of the disintegrator used in the British standard method of testing, but considered it as the standardizing of a piece of apparatus rather than the performance. He preferred a standard on performance rather than on mechanism. The hydraulic press exhibited by Mr. Clark was characterized by Mr. Williams as "plain clumsy" and should be modified. On the whole, however, he considered the apparatus and method of testing a forward step.

Reply to Criticisms—Mr. Clark replied to the criticisms in friendly fashion with no show of resentment. In regard to the criticism of the round sheet, he said it was easier and cheaper to make a round sheet than a square one. As to the size of the circular sheet it was originally much smaller, it being deemed best to test a large number of small samples than one big one. He reminded his critic that this was a pulp testing method and not a paper test.

Favorable Criticism—J. J. O'Connor, The Mead Corporation, said he was favorably impressed with the apparent good formation of the sheet and it was his intention to make a comparison at the mill in Chillicothe with the Clark or British method and their own method. He observed that freeness tests do no really give a measure of the work of the pulp on the paper machine.

The sixth paper on the list, "Interconversion of Freeness Scales" had a direct bearing on some of the points raised in the previous paper. The authors were D. S. Davis and L. E. Simerl, staff mathematician and laboratory assistant, respectively, of The Mead Corporation.

Interconversion of Freeness Scales

In the paper by D. S. Davis and L. E. Simerl curves and equations were given that represented the interconversion of scales for six types of freeness testers such as are in use today in the United States and Canada. It was observed that no two types of tester agree in freeness scale. The situation was further complicated by the fact that with some testers the freeness number is the volume of water draining through the fiber mat above a certain weight. With another it is proportional to the difference between this volume and a constant, and with still another it is the time required for a certain volume to drain through the mat. Furthermore, standard conditions for testing differ widely, two standard temperatures and three standard consistencies being in use. As the result of a recent suit one tester may no longer be used in the United States and many mill chemists in changing to some other type will need some idea of the character of the various conversion curves. It was stated that while the conversion scales were applicable in only an approximate manner where stock conditions differ from those mentioned in the paper, the charts and equations might serve as a starting point in interpreting conversion data under other conditions.

Discussion of Freeness Curves

W. Boyd Campbell, Forest Products Laboratories of Canada, started the discussion of Mr. Davis's paper by advancing to the platform and speaking in a clear, loud voice, in contrast to some of the previous speakers who did not move from their places and spoke in low tones which could not be heard by the official stenographer. Mr. Campbell expressed the opinion that conversion factors such as those instanced by Mr. Davis would hardly apply where different pulps were used and he called attention to the fact that Mr. Davis had omitted from his paper mention of the British sheet machine which was an ideal freeness tester. He asked Mr. Davis to make a calculation of some kind of the resistance to flow of different freeness testers.

Mr. Stevens said he had been playing with the subject of hydration for sometime past and had reached the conclusion that centrifugal force was a good means of determining hydration.

Pulping Properties of Spruce and Balsam

The paper by Bjarne Johnsen and Charles H. Reese on the "Evaluation of Spruce and Balsam as Pulpwood" constituted a lengthy scientific investigation of the pulping properties of spruce and balsam from different sources which appeared to demonstrate the possibility of adjusting cooking conditions so as to obtain optimum results of yield and quality of pulp. In summarizing the paper, the authors point to a striking variation concerned with the difference in amount of solid wood required to produce a definite weight of pulp. Most mills purchase wood by the cord, and, while it was not within the scope of the paper to place the comparison on a cord basis, the study was expanded to include measurement of number of sticks per cord, percentage of bark, actual length and diameter of stocks, trim, amount of cull wood and actual cubic feet of wood in a cord, values which were obtained by the woodlands department at Hammermill. Having obtained the yield of pulp per unit volume of wood, and having determined the physical and chemical properties of the pulp produced, the relative price at which wood for pulp production should be purchased from any source could be determined.

Other results of a practical nature, mentioned in the authors' summary, which could be calculated were the variation in capacity of a mill caused by differences in quality of the wood being cooked, the increase in steam required per ton of pulp when wood of low specific gravity is cooked, or when wood requiring high temperature is digested. Consumption of certain raw materials would also be affected since approximately the same volume of acid would be required to cook wood which would give a low yield and wood which would give a higher yield of pulp on a volume basis.

Discussion of the Paper

Mr. Stevens inquired if any steps had been taken by the authors to determine how much wood actually went into the

digester. He was of opinion that in the matter of determination of digester charge, pulp mill practice had lagged behind other engineering work.

H. A. Morrisson, Oliver United Filters, asked if any tests had been made of the actual cubic measurement of a cord of wood and instanced the various figures that had been named at different times.

D. E. Cable, U. S. Rubber Company, congratulated the authors on their work and asked if they had any data on the relative fiber lengths of spruce and balsam, without, however, getting any response.

The eighth paper on the list dealing with the role of medullary ray cells in pulp and papermaking was passed over to the opening session on Friday morning to permit of an illustrated demonstration of the Razek-Mulder Color Analyzer, for which the stage had been set with a photoelectric spectrophotometer and projectoscope. The apparatus was operated by Joseph Razek, University of Pennsylvania, while Jackson Burgess, Burgess-Parr Company, Moline, Ill., described the various steps in the analysis and comparison of colors by its means.

Color Analyzer for Paper

In an introduction, Mr. Burgess gave a definition of color before describing the operation of the color analyzer. Thus he said that color might be defined as the reaction produced in the mind when certain wave-lengths of light enter the eye. The shortest wave-lengths which produce visible light are about 400 millimicrons, while the longest are about 700 millimicrons. Light of 400 millimicrons wave-length produces a sensation of violet, and as the wave-length increases the sensation changes from violet to blue, green, yellow, orange, and red, until the wave-length is more than 700 millimicrons, at which point the energy again becomes invisible. White light is composed of equal intensity of wave-lengths from 400 millimicrons to 700. When white light falls upon a substance, three resultant processes may occur, namely absorption, transmission, and reflection. If all the light is absorbed, the substance is black, since no light comes from it.

The Razek-Mulder instrument is equipped with a mirror arrangement, a photoelectric cell and photographic plates. The sample of colored substance to be analyzed is illuminated by intense light which contains all of the wave-length existing in the visible spectrum. The light reflected from the sample travels through a spectrometer, where it is separated into the various wave-lengths of which it is composed. A mirror arrangement reflects a narrow band of wave-lengths onto a photoelectric cell, which produces a small amount of electrical current. By means of a special amplifying circuit, the current is greatly magnified so as to actuate a galvanometer needle upon which is mounted a small mirror. Light from a straight line filament lamp strikes the mirror, and is reflected onto a photographic plate, where it thus records the position of the galvanometer needle. As the mirror which reflects the narrow wave-length bands into the photoelectric cell is rotated, the light which strikes the photoelectric cell changes from violet through the spectrum to red, and with each change the output of the cell varies, and causes a change in the position of the galvanometer needle. The photographic plate is moved synchronously with the rotation of the mirror, thus exposing different areas to the beam of light reflected from the galvanometer needle. The motion of the photographic film, combined with the rotation of the mirror and its subsequent effect upon the galvanometer needle, thus produces a spectrophotometric curve which indicates exactly what concentrations of each band of wave-lengths exist in the original light.

A spectrophotometric curve made as described was said to be the only exact specification of a color; any color producing the same curve being the same color.

Sensitivity of the Instrument

In the discussion which followed, Doctor Cable asked if the instrument was sufficiently sensitive to detect differences in hues not visible to the human eye, and was informed that it would. The paper was also discussed by Allen Abrams and R. W. Johnston, of the Forest Products Laboratory of Canada, the last named mentioned some experiments he had conducted with expert colorist in connection with various tests made with an Ives tint photometer. He found that the judgment of the expert colorists was slightly under that of the instrument.

The forenoon sitting was then adjourned, it being announced that a luncheon meeting would take place at Masonic Temple where an address would be given by L. C. Reynolds, American Writing Paper Company, on "The Foundation for the Operation of Modern Management Methods," to be followed by a visit of inspection to the Hammermill Paper Company plant where a group picture of the members was to be taken.

Luncheon Meeting at the Masonic Temple

While the ladies of the party were having a feast of their own at Hunter's Lodge, the men folk gathered to the number of 250 at Masonic Temple and after disposing of a most appetizing lunch listened to an address on modern management methods, delivered without notes by Mr. Reynolds, the comptroller and assistant to the president of the American Writing Paper Company, who is chairman of the new Management Methods Committee of the Technical Association.

Modern Management Methods

In the course of his talk, Mr. Reynolds reviewed interestingly the development of modern business methods, with special reference to standard costs and production control. He outlined the principles of mass production from which standardization was derived. The experience of the automobile industry was instanced. It was in this industry that mass production attained prominence. In the early days consumer demand exceeded supply. "Dealers actually stood at the factories in Detroit, with their own drivers, waiting and demanding the next machines produced. The result was an endeavor at mass production. This meant an accurate dovetailing and co-ordination of the efforts of a thousand human beings each touching a certain part of the resultant product. Many were the anxious hours when executives saw materials and units pile up and go to the rubbish heap because they wouldn't go together; and likewise there were the hours when hundreds of people were idle because of some group not being properly co-ordinated with the whole organization. Better control was needed, but based on what? Control of quality, of output, and the like, implies that there be a basis for comparison—a yardstick by which to measure quality or quantity. This yardstick became our **standard** or bogey. The natural result of mass production was **standardization**, first within the individual companies and then with the entire industry."

The S.A.E. and T.A.P.P.I.—The Society of Automotive Engineers occupies the same place in the automobile industry that T.A.P.P.I. does in the paper industry, promulgating standards for the automobile. The society found it necessary to standardize the raw materials used. Starting in with the steel mill they established standard classifications for stocking of steel within steel mills as well as for all users of metal. Standards were then worked out for interchangeable parts. The result is an active set of committees and considerable interest when each proposed standard is put up for vote of the membership. What is known as "SAE Standards and Recommended Practices" is in loose-leaf form filling two binders of pocket size. The loose-leaf permits of prompt revision as well as of additions.

Mr. Reynolds said that T.A.P.P.I. had a wonderful record of accomplishments and the work already done could be brought to successful fruition through the adoption of some such method as that used by the S.A.E.

Disposal of Objections—Touching on the objections to standardization in any form, Mr. Reynolds said that one wanted to know just what there was to standardize, and another would be found to say: "It is all right for the other fellow, our business is different, anyway be specific." To answer this question would, Mr. Reynolds said, be like settling the details before the policy was decided upon. He mentioned that the American Standards Association is in existence for the purpose of standardization and the member bodies of it include practically every national engineering organization except T.A.P.P.I. It also includes indus-

trial organizations of a wide variety, even the National Laundryowners Association. Mr. Reynolds told of the other objections one by one. There was lack of interest in the possibilities to overcome, pride of existing traditional practice; objection to any regularization on the part of a manufacturer until he had tried it out on his own product. Other obstacles or objections that received allusion were lack of time on the part of busy men to devote attention to anything that was a general promotion of their own industry, to the neglect of their own specific work; a feeling that a particular manufacturer was perfectly able to take care of his own business; lack of immediate results from standard practice, and lastly a feeling that a standard was something rigid, resisting change and so hampering the progress and stultifying the state of the art.

In regard to the last objection, Mr. Reynolds said it was fallacious and was best answered by pointing out that standardization does not mean standing still, rigid, but moving together in harmony; and no standard should be regarded as the best solution for all time, which is why the SAE uses a loose-leaf system.

Use of Standards—Referring to standard costs and production control, he said that a standard cost was composed of three elements—material, labor and overhead, each of which was subject to standardization. Materials must have each shipment tested and its gradation certified unless it could be purchased on a standard specification. If materials can always come to a standard specification the task is easy, otherwise it is a compromise. A standard furnish must be decided upon after which a standard cost of materials can be figured out when based on correct manufacture. A standard performance of labor must be established both for men and machinery. A wage incentive system or a standard pay-roll and a production volume requirement would create a standard labor cost. Unless however the furnish is always the same for a given grade or kind of paper this is not attainable. Standard overhead is a set-up of all expenses for full-time operation and proportioned to the orders run. This overhead includes factors open to standardization for materials as well as for the individual mill organization.

Sales Forecast the Starting Point—Mr. Reynolds said that the foregoing covered only one aspect of management methods. The starting point today was the sales forecast, backed by statistics, sales quotas and market analysis, work which cannot be begun without a standardization of product. Creating grades for the various lines of manufacture enables a classification and a study whereby the forecast can be made and developed into manufacturing quotas. After this has been developed into standard furnishes of standard materials it then develops material quotas for the purchasing through yearly contracts or otherwise.

Inventory control was touched upon, Mr. Reynolds saying that a great many companies have been wrecked by lack of such control. An inventory control cannot be started without having the standards and quotas previously mentioned.

As to efficiency, what may be most efficient today might not be so tomorrow. Standards are necessary for the measurement of efficiency.

Quality Control—Quality control was then touched upon. In this the factor of standardization of material and practice was very important. Standard means doing the same thing the same way and of the same materials always, unless and until a better method or material can be found and made the standard.

How It Serves the Financial Executive—Attention to the foregoing places the financial executive in a position to ascertain at all times what capital he needs and what cash balance he will have. It also makes profits more certain. Mr. Reynolds gave it as his opinion that profits would ultimately be a first charge against income instead of a last result, when the formula in use will run—**income minus profits equals allowable expense**—rather than—**income minus expense equals profits or maybe loss.**

In his discussion of management methods Mr. Reynolds placed the human relations last, because personal effort follows easier and becomes a natural outcome of co-ordination and control.

After thanking Mr. Reynolds, President Krimmel announced that buses were waiting at the hotel to take the members on a trip to the Hammermill Paper Company plant where a group picture would be taken prior to an inspection of the different departments of the mill and laboratories. For the picture the members were grouped in front of the spacious laboratory building at the entrance to the mill grounds.

Complimentary Banquet at the Lawrence Hotel

The day's proceedings closed with a complimentary informal dinner for members and guests at the Lawrence Hotel, the host of the occasion being the Hammermill Paper Company. Here, as at the luncheon earlier in the day, the Canadian flag was displayed on the wall behind the speaker's table in standards of equal size and number with the Stars and Stripes, a delicate compliment to members of the Technical Section of the Canadian Pulp and Paper Association, some of whom came great distances to attend the fall meeting of T.A.P.P.I. An excellent dinner was served, and with the arrival of the coffee and cigars, Henry F. Obermanns, general chairman of the Erie convention committees, welcomed those present in behalf of the Hammermill Paper Company. He read a telegram of regret for absence from Vice-President Norman W. Wilson, who had been busy the previous week in conducting the annual conference of the Hammermill Bond Agents. Mr. Obermanns touched briefly on the organization of the Technical Association by five men at the Hotel LaSalle, Chicago, on March 5, 1915, the idea having been suggested by Ernst Mahler after attendance on a meeting of the German Association of Cellulose and Paper Chemists in January, 1914. He said that a great deal of credit should be given to Mr. Mahler as the real organizer and charter member of T.A.P.P.I. Mr. Mahler's latest great contribution to the industry was the formation of the Institute of Paper Chemistry at Appleton, Wis.

Krimmel Is Toastmaster

Mr. Obermanns then introduced M. A. Krimmel, president of the Technical Association, who was to act as toastmaster, who acknowledged on behalf of the association grateful appreciation of the generosity of the Hammermill Paper Company in tendering the banquet and providing generally for a successful meeting. Mr. Krimmel touched on the representation of the Canadian Forest Products Laboratories in attendance and paid tribute to the ladies. He then introduced the speaker of the evening, Dr. H. E. Howe, editor of **Industrial and Engineering Chemistry**, Washington, D. C., remarking that Doctor Howe was an intensely human person, which prompted him to introduce him in the words, "Here's Howe!". Doctor Howe made a speech of unusual brilliance in which he sketched the development of large business concerns having a chemical basis. He was followed by E. Parke Cameron, chief of the Pulp and Paper Section of the Canadian Forest Laboratories, and Allen Abrams.

FRIDAY'S SESSION

The opening sitting on Friday morning, September 5, began with a paper carried over from Thursday. Listed in the program under the title "Role of Medullary Ray Cells in Pulp and Paper Making," the paper, which was read in abstract by F. A. Simmonds, represented a study of the effect of pebble mill treatment of a pulp prepared by the chlorination method. It was a contribution from the U. S. Forest Products Laboratory, Madison, Wis., to the Research and Development Division of T.A.P.P.I., the collaborators with Mr. Simmonds being George J. Ritter and R. M. Seborg.

Effect of Mechanical Treatment on Pulp Prepared by Chlorination

In the beginning it was noted that the development of an improved or new process to increase the yield of pulp made from wood without an attendant sacrifice of quality was one of the problems confronting the industry. There is a potential yield of 60 per cent of cellulose from wood, but upwards of 25 per cent is lost by most of the pulping processes in use.

Pulp prepared by the chlorination process was defined as the residue remaining when moist wood is treated successively

with chlorine gas and a dilute solution of sodium sulphite. This method of preparing cellulose is practiced only on a laboratory scale, as its value for commercial operations is a matter of dispute.

The conclusions of the authors from a study of the effect of mechanical treatment on a pulp prepared by the chlorination process is that a yield of 58 per cent of desirable papermaking material can be prepared by the process from white spruce wood.

Part II of the paper dealt with the effect of processing on the number of ray cells in pulps and stuffs. An increase in the concentration of sulphate cooking liquor causes a decrease in the ray cell content of the resultant pulp, which suggests that the chemical constitution of these cells is intermediate between the stable cellulose and the easily hydrolyzed hemicelluloses.

It was stated that in commercial operations the largest number of ray cells are probably lost through the wires of the wet machine. Bleaching destroys a certain percentage of ray cells and renders the remainder more susceptible to disintegration by mechanical processing.

There was no discussion of this paper.

Water Clarification at the Hammermill Plant

An interesting account was given by F. E. Divine, in his paper on "Coagulation Factors in Water Clarification," of the water works system of the Hammermill Paper Company. The water used by the mill is taken from Lake Erie. The intake is in 18 ft. of water and consists of a crib 28 ft. square extending above the lake level, built of 12 x 12 timbers surrounded by large stone. A 48-in. steel pipe line buried under the bed of the lake carries the water to the pump well, an excavation in solid rock 18 ft. deep. The water is filtered and settled in a basin 180 ft. long, 75 ft. wide and 18 ft. 6 in. deep. The basin is covered with a concrete roof and earth for the purpose of keeping out the light and so preventing the growth of plant life. The capacity of the basin is 1,700,000 gallons. The water flows by gravity through a 36-in. pipe to a filter plant consisting of twenty-five rapid-fan filters. The water passes from the filters to a clear well underneath them from which it is pumped to the distribution system throughout the mills.

Coagulation Problems—Coagulation or sedimentation was referred to by Mr. Divine as an interesting problem. It has been found that alum is the best coagulant for lake water. Every gallon of water passing to the settling basin receives a certain amount of alum in solution. Trouble is experienced at different seasons of the year in getting the alum to coagulate and settle out in the basin. An experimental sedimentation tank was constructed of a capacity of 100,000 gallons per twenty-four hours. The experiments demonstrated that there were days when good coagulation could not be effected, it made no difference how much alum was used or whether a four, six or eight-hour settling was used. Different points were selected for the addition of alum, the point of application of the coagulant appearing to be more important than an increase.

The paper contained many suggestions concerning control of water and coagulant which will be of value to mills similarly situated. One point brought out was that the mixing of water and chemical must be conducted slowly, to prevent breaking up the flock after it has once been formed.

Discussion of Mr. Divine's Paper

An unusual amount of interest was taken in this paper, judging from the questions that were asked of Mr. Divine.

A. E. Cofrin, Fort Howard Paper Company, said that some manufacturers of water coagulants advocated a rapid agitation of the water simultaneously with the application of the reagent and he asked Mr. Divine if this was the practice at Hammermill. Mr. Divine said it was best to allow the water to flow slowly. At first in the operations at the Hammermill plant there was an extended period of flowage, but this had been shortened latterly.

Critical Point of Flocculation

In reply to a question by George K. Spence regarding the critical point of flocculation, Mr. Divine said that the floc attained its maximum size at the end of a twenty-five minute period. It was necessary to have a large sized floc to obtain sedimentation.

It was brought out in the course of the discussion that Lake Erie water was superior to most mill waters in the United States, as regards hardness presumably. The use of an ejector for the alum solution was spoken of. This is a piece of apparatus made by Schutte & Koerting Company, Philadelphia, which saves pumping.

C. M. Baker, American Paper and Pulp Association, took part in the discussion and gave a long and interesting account of water purification processes.

Chlorination of Well Water

F. H. Johnson, Jr., Consolidated Water Power and Paper Company, asked how far the chlorination process should go previous to treatment in the settling basin. In the treatment of slime, success had followed the introduction of a 10 per cent solution of caustic soda for cleaning pipes. At his mill the pump well was treated before sedimentation. It was his experience that the use of bleach liquor improved the appearance of the water and prevented the deposition of slime.

Mr. Baker approved the application of chlorine to well water, and added, that "when we all use a closed system, which will be soon, it will be necessary to chlorinate the white water."

All-Groundwood Newsprint

This closed the discussion and J. H. Slater, Escanaba Paper Company, asked leave to call attention to copies of a Minneapolis newspaper, a supply of which had been sent for distribution to the members. This paper contained no sulphite pulp, but a proportion of groundwood that had been treated by the Fish process at the plant of the Watab Paper Company previous to grinding. The appearance of the sheet made a good impression.

Bleaching Southern Pine

One of two papers contributed by the Canadian Forest Products Laboratories, entitled "Influence of Bleaching on Viscosity" was read by title, and was followed by another on "Bleaching of Southern Pine Sulphate Pulp," by C. E. Curran, M. W. Bray, and R. H. Doughty. Mr. Doughty read the paper, in which a two-stage process of bleaching by hyperchlorites was advocated as giving optimum results. Temperature variations produced little or no effect, he said.

A paper on "Consistency Determination by Absorption of Light" was presented as a contribution of the Forest Products Laboratories of Canada to the Research and Development Division, the authors being O. M. Maass, H. W. Johnston and J. S. Hart. Mr. Hart read the paper while Mr. Johnston operated a projectoscope to show a series of graphs indicating consistencies by curves.

Local Contributors

Following announcements by Mr. Obermanns, F. P. Klund, chairman of the Committee on Administration, made an acknowledgment of contributions to the entertainment fund by local firms, including the Burke Electric Company, manufacturers of motor generators; Erie City Iron Works, manufacturers of boilers, high-pressure boilers and pulverized coal equipment; Erie Forge and Steel Company; Heisler Locomotive Works, manufacturers of geared locomotives; Union Iron Works, boilers; Jarecki Manufacturing Company, valves, fittings and pipe threading machinery; Kalbfleisch Corporation, chemicals, rosin size; Skinner Engine Company, universal unaflow engine, of which one could be seen in operation at the Hammermill plant. Most of the foregoing firms welcomed visitors to their plants.

The reading of papers was continued after this. W. H. Monsson and G. H. Chidester were represented by a paper on the pulping of eastern hemlock, with consideration of the effect of temperature schedules on yield and quality, which was read in brief abstract form. It was stated that hemlock was lower in cellulose and higher in resin than spruce.

Improvements in Paper Mill Equipment

R. W. Pattison read a paper on "Paper Machine Equip-

ment and Operation," prepared by himself and L. M. Yoerg at the plant of the American Writing Paper Company, Holyoke, Mass., in which he recounted a series of modern improvements in paper mill equipment, among which the following stood out as instances of changing tendencies in mill work: Wooden stock chests are being replaced by concrete or tile-lined tanks; low-speed plunger pumps are used and in some mills rotary pumps are taking the place of plunger pumps.

A general discussion of paper machine room equipment included pointers on their proper use. It was noted that the Minton Vacuum Dryer could not be used on high-grade papers unless it was followed by dryers heated to a higher temperature.

Supplementary Talks by J. H. Slater

J. H. Slater rose to discuss the paper and contributed a lot of valuable information concerning improvements in methods and machinery. Rotary pumps worked out well, he said, on short-fibered stock, while for slow stock a plunger pump was best. In the manufacture of board, a rotary pump was a nuisance and riffiers belonged to a bygone age. The rotary type of screen, shell built, worked better than a flat screen, though flat screens are believed to make cleaner paper. As to headboxes there were as many of these as there are paper men. There was need, he declared, for improvements in methods of getting stock on the wire. He was of opinion that fewer rubber-covered rolls would be seen in the future; bronze rolls would be more used. The real big improvements in machinery and methods that have been developed during recent years have come from fast mills and big machines, he added.

Mr. Stevens asked the committee if it would not give more attention in the future to the use of rolls. This would be especially appreciated by board mills.

Sequence of Temperatures in Drying

Mr. Pattison asked if anyone present had done any work in the sequence of temperatures from wet end to dry end.

Mr. Slater said he had had some experience in varying the temperatures of a nest of dryers, one arrangement of his provided for having the first dryer cooler than the second dryer and so on, ending with the highest temperature at the last section.

Mr. Pattison said that a superior sized sheet was obtained by graduated drying in the way outlined by Mr. Slater.

The closing paper at the morning session on Friday "Air, Heat and Moisture Balance for the Paper Machine Room," by A. S. Goodrich and H. G. Brehme was illustrated by lantern slides.

Air and Steam Supply of Paper Machine Rooms

In the paper by A. S. Goodrich and H. G. Brehme, engineers of the Hammermill Paper Company, a most informing and interesting account of paper machine room steam and air requirements was given. The methods of making various air, moisture and steam tests were described in detail, and accompanying the paper were tables of production, steam consumption, air supply and air exhaust that represented considerable work on the part of the authors. This paper appears in full beginning on page 1040 of this issue.

Adjournment for Luncheon

Abstracts of several papers presented and read by title prior to the adjournment for luncheon are given below. Following the luncheon there was a program of games and plant visitations and in the evening all gathered for a most enjoyable Fish Fry at Presque Isle where prizes were distributed to the winners of the golf and quoit tournaments.

Abstracts of Papers Read by Title

The papers read by title consisted of the following: Automatic Consistency Control in the Paper Mill, S. E. Meyers; Continuous Vacuum Filters in Closed White Water Systems, A. O. Bragg; Directional Designation in Physical Tests of Paper, F. T. Carson and L. W. Snyder; Determination of Chlorine Consumption of Pulps, F. A. Simmonds, and Isolation of Cellulose by the Chlorination Method, F. A. Simmonds.

Stock Consistency Regulator

The paper by Sidney E. Meyers on "Automatic Consistency Control in the Paper Mill" described a device designed by the author and his associates in the Merritt Engineering & Sales Company, Inc., of Lockport, N. Y. This apparatus is designed to handle all stock in transit, thus avoiding the necessity of sampling or by-passing a portion of stock for regulator purposes. Its adaptability is said to have been thoroughly established by a successful operation on stocks from the coarsest to the finest. The device is automatic in its operation and derives its regulating impulse from an agitator revolving at constant speed within the stuff to be regulated. As the stock becomes heavier or lighter, the work required to drive the agitator is increased or decreased and is instantaneously reflected in the tension of the power transmitting chain. An increase in consistency tightens the chain and elevates a floating member under control of an adjustable spring which operates to raise the water valve to a position depending upon the density of the stock. By a system of signal lamps within eyesight of the operator preparing the stock, a red signal indicates stock too light for regulation; white shows stock approaching at the consistency for which the machine is set and denotes that the valve is just at the opening point; blue indicates an open valve with regulating water passing through the stuff. Therefore a blue signal should always be kept in sight.

Some useful suggestions were given by Mr. Divine regarding methods of carrying out consistency determinations. It is best to obtain a fairly large bulk sample, not less than two pounds weight, from a freely falling stream of stock, an ideal place to obtain it being just beyond the crest of an overflow board in a stuff box.

White Water Systems and Equipment

The paper by A. O. Bragg, of the Oliver United Filters Corporation, on "Continuous Vacuum Filters in Closed White Water Systems," was read by title. It gave an informing review of the factors influencing returns from investments in save-all apparatus, factors which should be weighed carefully by mill executives before selecting a white water system. In general, Mr. Bragg said, where the white water is less than 500 g.p.m., the use of a save-all of the cheapest type was preferable to a high efficiency save-all, owing to financial consideration. For larger flows two high efficiency type save-alls were available and should be used, since the financial returns were sufficiently large to make the use of any other kind uneconomical. He referred to sedimentation tanks and continuous vacuum filters which were declared the most efficient of their kind. Continuous recovery as high as 98 per cent was being made with vacuum filters. The sedimentation tank operates successfully on short fiber white water containing clay, and where color changes are infrequent. Where color changes are frequent, the time required and stock lost in washups offsets any gain in operating a sedimentation save-all. Chlorination of the system is required to prevent slime accumulation.

It was noted that the saving effected by the use of well clarified white water on machine showers were such as compared with fresh water that no mill could afford to ignore them. On board machines the savings consequent on the recirculation of clarified white water through showers from vats were quite remarkable, as reported by Mr. Bragg. Thus a seven-cylinder machine on newsboard increased its production by twenty to twenty-three tons a day, the increase in production being attributed to faster formation through the use of warm stock due to recirculation, more effective pressing and faster drying. He said there was not a grade of paper, except perhaps rag bond, in which the use of well clarified white water on the showers would not bring about substantial stock savings, and also improve the quality of the sheet through taking up the fine white water solids.

Tentative Pulp Testing Methods

The Committee on Pulp Testing submitted two proposed standard methods of testing, one relating to a method of determining the chlorine consumption of compounds in pulp other than cellulose, and another a proposed standard method for the isolation of cellulose by the chlorination method.

Annual Meeting of Hammermill Agents

Problems of Merchandising, Advertising and Business Conduct Discussed in Constructive Reports and Round-Table Talks at Conference in Erie, Pa.

PAPER merchants who market the Hammermill lines in the United States and Canada, to the number of 115, were guests of the Hammermill Paper Company at the Kahkwa Country Club in the outskirts of Erie, Pa., during the four days of August 26, 27, 28 and 29. There, in addition to business sessions for the discussion of advertising and merchandising problems, a most attractive program of entertainment was carried through, so that every moment of the time was spent with profit and enjoyment.

Preliminary to the general sessions, a luncheon meeting of the Agents' Advisory Committee and company officials was held at Weigelia Lodge, the summer home of Norman W. Wilson, vice-president and general manager of the Hammermill Paper Company. This was followed in the evening by a dinner at the Erie Club. For the first time in years every member of the committee was present. Those in attendance were Harold Helmer, Beecher, Peck & Lewis, Detroit, Mich.; E. C. Mead, Richmond Paper Company, Richmond, Va.; Jake Nacht, Union Card and Paper Company, New York, N. Y.; B. E. Reeves, Alling & Cory, Rochester, N. Y.; A. D. Tayloe, Tayloe Paper Company, Memphis, Tenn.; Edward McCorkendale, Paper Merchants, Inc., Philadelphia, Pa.; R. S. Bull, Bradner Smith & Co., Chicago, Ill.; H. L. Carter, Carter, Rice & Co., Boston, Mass.; L. A. Colton, Zellerbach Paper Company, San Francisco, Cal.; I. W. Carpenter, Carpenter Paper Company, Omaha, Neb.

The chief matters discussed at these preliminary meetings had to do with the business to be brought up at the general sessions at the Kahkwa Club on Wednesday, Thursday and Friday.

The first general business session on Wednesday was opened by Norman W. Wilson, who, after a cordial address of welcome, outlined briefly the work that has been done in the Hammermill plant in the way of a general overhauling and the introduction of modern equipment to assure a product that will meet the demands of the merchandising staff.

C. Washington Chabot, director of distribution for Hammermill, outlined the merchandising program that would be put into effect. He was followed by Harrison Baldwin, manager of sales, and A. Ellis Frampton, advertising manager, who explained the details of the sales and advertising programs for the coming year.

Bruce Barton Gives Inspirational Talk

Bruce Barton, author of "The Book Nobody Knows", "The Man Nobody Knows", and other works of wide circulation, who is now a member of the New York advertising firm of Batten, Barton, Duistine & Osborn, made the principal address at the opening session on Wednesday. His talk bore chiefly on the psychology of trade depression, a pertinent and timely topic, which he made especially interesting by drawing on his own experience in his wide and varied work. Of particular interest were his references to stock market conditions. He instanced the fluctuations in the stock market of some of the most successful and wealthy industrial firms to give point to his contention that no business that was well founded need have any fear of the present depression.

Mr. Barton's observations constituted a well-reasoned constructive dissertation on the business situation that was of pertinent application. He asserted what amounted to a truism, that a business to last any length of time must be built on integrity by hard work with unlimited faith in future growth and development. A novel, yet significant, statement of Mr. Barton's was that advertising should never be addressed to a mass gathering (to people en masse), but rather to a moving procession of individuals, and must be so regarded and considered if it was to be effective. Coming from one of the country's foremost advertising authorities, this statement made a deep impression.

The principal speaker on Thursday's program was John C. Howell, a noted consulting economist of New York, formerly of the Brookmire statistical service. His address dealt for the most part with the causes of business depression and inflation. He gave it as his opinion that we would soon witness slightly improved trade conditions, with business being sustained on a straight line rather than a climb back to the old high, abnormal levels.

Round-table discussions with the Hammermill merchandising staff occupied most of the time of the visitors on Thursday and Friday at which many problems pertaining to sales were threshed out. Among other business transacted on Friday was an election to fill vacancies on the Agents' Advisory Committee. On account of the retirement by expiration of term of E. C. Mead, Harold Helmer and J. Nacht, the following agents were elected to take their places:

H. F. Petrequin, Petrequin Paper Company, Cleveland, Ohio; Max Greenebaum, Beekman Paper and Card Company, New York, N. Y.; G. E. Caskie, Caskie-Dillard Company, Lynchburg, Va.

Sports and Entertainment

The visiting agents and guests were made free of an 18-hole golf course, and prizes were contested for here as well with quoits and obstacle golf.

An innovation this year consisted of prizes donated by a number of paper merchants to be contested for by members of the Hammermill staff in attendance on the meeting. The idea originated with Charles C. Walden, Jr., who interested others who were desirous of making some recognition of the unfailing courtesy and attention which they had received at previous meetings from the heads of departments in Erie. The result was seen in a handsome set of prizes for various sporting events. The generosity of the donors was acknowledged by Mr. Wilson during the closing hours of the conference. No list was available of the prize winners so far as the Hammermill staff was concerned, but the contests in which agents from out of town played and the prizes won by them were announced as follows:

Thursday's Prize Winners

Golf

Low Gross	Dana Payne, Daka Paper Company, Erie, Pa. Set of three matched woods.
First Low Net	B. E. Reeves, Alling & Cory, Rochester, N. Y. Black golf bag.
Second Low Net	Frank Leslie, John Leslie Paper Company, Minneapolis, Minn. Golf sweater and socks.
Knickers Handicap	E. V. Johnson, U. S. Envelope Company, Springfield, Mass. Golf case.

Obstacle Golf

First Prize	Howard Larson, Crescent Paper Company, Indianapolis, Ind. Silver pitcher.
Second Prize	Sydney T. Jones, Hudson Valley Paper Company, Albany, N. Y. Cocktail shaker.

Quoits

First Prize	Roscoe Taylor, Western Newspaper Union, Fort Wayne, Ind. Auto Robe.
Second Prize	J. M. Knablein, Durico Paper Company, Erie, Pa. Bridge set.

Friday's Prize Winners

Golf-Flag Tournament—1st Prize—R. S. Johnston, The

Old Dominion Paper Company, Norfolk, Va. Brown golf bag; 2nd Prize—Frank Leslie, John Leslie Paper Company, Minneapolis, Minn. Suede jacket.

Obstacle Golf—1st Prize—R. M. Clements, Clements Paper Company, Nashville, Tenn. Wrist band; 2nd Prize—J. B. Jones, Western Newspaper Union, Omaha, Neb., won a Rumidor. (This is not a typographical error; Rumidor is correct).

Quoit—1st Prize—Bernard Lipscomb, Richmond Paper Company, Richmond, Va. A humidor; 2nd Prize—J. Horace Bliss, Daka Paper Company, Erie, Pa. A cocktail shaker.

Souvenirs of the Conference

Each agent and guest attending the conference was presented with a useful desk calendar that will be serviceable for twenty years to come and which can be manipulated to show the days and dates of months backward to 1901. Members of the Hammermill Old Guard received in addition a neat manicure set encased in pig skin. To be qualified as a member of the Old Guard, one must have attended at least five consecutive annual conferences.

Southeastern Supers Will Convene at Asheville, N. C.

The annual meeting of the Southeastern Division of the American Pulp and Paper Mill Superintendents' Association will be held at the George-Vanderbilt Hotel, Asheville, N. C., on Friday and Saturday, October 3-4. The meetings will be divided between Asheville and Canton. The registration will be at the George Vanderbilt Hotel, Asheville on Friday morning and members and their friends will be driven to the plant of The Champion Fibre Company, which is located at Canton, twenty miles from Asheville. The visitors will be the guests of The Champion Fibre Company for luncheon, after which a visit to the plant will be made, followed by a technical meeting at the Champion Y. M. C. A.

In the evening a dinner for members and friends will be given at the George Vanderbilt Hotel, Asheville. On Saturday morning a technical meeting will be held at the hotel. The afternoon will be devoted to golf or sightseeing and the sessions will be brought to a close with a banquet at the George Vanderbilt Hotel on Saturday evening.

Ladies are invited to attend the convention.

Mr. D. J. Kerr of The Champion Fibre Company, Canton is chairman of the local committee, which consists of R. J. Sprang, W. M. Benzing, G. M. Trostel, H. A. Helder, Wm. S. Brooks, H. Williamson and J. S. Schumaker.

National Power Show in December

Under the leadership of I. E. Moultrop, chairman, preliminary details of the Ninth National Exposition of Power and Mechanical Engineering to be held December 1 to 6 in Grand Central Palace, New York City, are well under way.

It has been stated by the committee in charge that already the problem of finding space to fit in new exhibitors is a real one. The indications are that the Grand Central Palace will be crowded. There were only 105 exhibitors at the first show but that at this time with the show for 1930 three months away already more than 400 have taken space and are actively planning to make this the best year that the National Power Show has had.

Business conditions in general are such as to make a show at this time of more than ordinary economic interest. Plant managers feel the need for keeping up to the minute in all methods of economy in these times and on the other hand business is not rushing at a pace to keep the important persons in the larger organizations too busy to attend.

When the first Power Show opened its doors nine years ago the use of pulverized coal was in its infancy and the field was divided in opinion as to its use. Yet today we learn that in the electric and public utility plants of this country alone there is being burned each year 7,112,739 tons of coal in pulverized form in those queer devices that were first shown at the first and subsequent National Power shows, gathering crowds around the booths where the equipment was looked upon in 1921 as a curiosity.

The six-day wonder is over and equipment that was a real "show" in itself in 1921 is an old story today. When the first Exhibit was held high pressures were spoken of, yes of course we used to have tall buildings, at least 16 to 20 stories high, but today we have 70 and 85 story buildings which are in a measure made possible by the accomplishments of the men who make the National Power Show the great interesting event that it is each year, and so we have also, instead of 300 to 400-pound pressure on the modern boiler, 1,400 pounds pressure. These things were unheard of a few years ago and had it not been for the meetings of the American Society of Mechanical Engineers held to discuss the advances each year in December and the visualization of the former discussions presented each year as commercial units of the Show the probabilities are that some of the exhibits at least would not be as indicative of the success of the power industry, as there would not have been the opportunity to show quickly and simply "how it works."

Mechanical engineering is moving ahead so fast in America that it is never possible to forecast the new devices and improvements on old ones that will be shown for the first time at the Power Show this year. Showing how it works is the most trying task of the manufacturer of heavy equipment and the Power Show solves his problem.

Since the National Power Show will not be held in 1931 this forthcoming exposition will draw better exhibits and a record attendance of visitors.

Research on Lithographic Papers

The July bulletin of the Paper Section, National Bureau of Standards, U. S. A., has a reference to a research on lithographic papers which is to be conducted jointly by the Lithographic Technical Foundation and the Bureau of Standards for the purpose of standardizing lithographic papers. It is noted, that while the Lithographic Technical Foundation has made considerable progress in technical studies related to lithographic printing, the bureau's assistance was requested in this branch of research because the Technical Foundation lacked facilities for the fundamental studies of paper qualities required.

Mechanical development in the lithographic printing industry has been very rapid in recent years. One of the outstanding developments is the offset process which permits production of high grade printing at greatly increased speeds. Lack of knowledge, however, of the characteristics required in papers to suit them to high-speed printing processes of this kind, has prevented full realization of the economies made possible by them. Some of the difficulties, which cause losses in both production and materials, are misregister of printing caused by distortion of paper, nonuniformity of ink reception by the paper, and deterioration of printing plates caused by chemically or physically active substances in the paper. While such difficulties are not always the fault of the paper, a thorough study of the relation of paper characteristics to the various printing operations should lead to a better understanding of the particular characteristics required in the papers to obtain optimum printing results.

A committee representative of the lithographic printers and manufacturers of lithographic printing supplies has been formed to assist in the work in an advisory capacity.

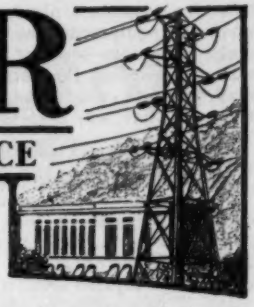
Economy of Treated Lumber

One of the applications where the use of treated lumber will show the largest savings is for the roofing of paper and pulp mills and similar places subjected to moisture and heat. The railroads, long users of treated lumber for ties, telegraph poles, station supports, census and similar structures is saving $145,000 per day, due to the use of treated lumber. Practically all large industrial centers now have one or more lumber yards stocking treated lumber which will last 20 years or more under the worst conditions where, ordinarily, the life of the untreated lumber might be anywhere from 2 to 5 years.

Recalling that the cost of freight and cost of labor are the same in either case, and that a few dollars extra per thousand feet of lumber spent for treating may increase the life of that lumber four to ten times, it is obvious that the purchase of treated lumber is a good investment.

POWER

GENERATION - UTILIZATION - MAINTENANCE



By W. S. JOULE

This section turns the searchlight upon power and its allied problems. It shows up big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

Reducing Valves, Too Large for Job, Objectionable

THE story has been told of the gentleman who ordered two medium boiled eggs. The waiter brought him three. When questioned why, the waiter replied that the extra egg was brought in case "one of them failed you." This same idea of "playing safe" seems to be quite general among engineers purchasing reducing valves. Very often, a valve will be ordered that is very much too big for the job. The reason for this is that the engineer feels that perhaps the load may increase to a point where the large reducing valve will still have ample capacity for its task. In other cases, it is felt that it is better to have one that is too large rather than one that is too small. In still other instances the engineer does not know just what the load is so he guesses by "playing safe."

The practice of installing a reducing valve much too big for the job is not a good one. It may cause considerable trouble before the reason is located. A reducing valve is the equivalent of a coupling between two railroad cars. Its capacity and its regulation depend upon the load which it must serve as well as upon the received or initial and delivered pressures. The size of valve should rightly depend upon the maximum and minimum load, as well as upon the received and delivered pressures. An example may serve to bring out these facts.

A reducing valve which had been in service for only a few months was in trouble. The valve seats were badly cut and the manufacturer furnished a new set of seats, accepting the complaint that the original valve seats were defective. Within a few weeks another complaint was made that the new seats had failed, with the request that the manufacturer replace them free of charge. The complaint was also made that there was something wrong with the valve. Again the customer received the benefit of the doubt and new valve seats were furnished free of charge. Shortly after the new seats were installed they became badly scored and cut and the manufacturer was called upon for the third time, to replace them. This time, however, the engineer decided that the valve was not satisfactory and that it would be necessary to replace it with another valve. Investigation was made by the manufacturer who found out that the valve ordered had been chosen with ample capacity for the possible future growth of the load. In short, the reducing valve was very much too big for the job.

Consequently, instead of being wide open at what was supposed to be full load, the valve was never full open as the load was never greater than about 60 per cent of what it was supposed to be. Actually, the valve had been chosen for about 12,000 lb. of steam per hour whereas the maximum load was found to be in the neighborhood of 6,500 lb. of steam per hour. The normal load, however, was in the neighborhood of 2,000 lb. For this low rate of steam flow, the valve lift between the valve seats was very greatly constricted. Wire drawing occurred a large part of the time, therefore. It was inevitable, therefore, that the valve seats would be quickly scored.

The small load was not the only difficulty encountered in the present case, however. The reducing valve was purchased for an initial pressure of 250 lb., whereas on account of drop through the delivery line, the actual delivery pressure was 195. Another fact brought out was that the steam was badly saturated, so still further increasing the wire drawing of the valve. Wet steam consists of globules of water entrained in the steam. These globules travel at the same velocity as the steam and when they encounter a small orifice such as the "cracked-open" valve seats, it was inevitable that the valve seats should become badly cut and quickly abraided.

The solution in the present case—and one which solved a difficulty—was to install a valve of proper rating for the load and for the actual pressures encountered.

Recording Constants of New Electrical Equipment

WHEN the field coil of a generator, the inductive or non-inductive shunt of a direct-current machine, the compensating coil of a voltmeter or the blow-out coil of an automatic contactor burns out, a serious situation may develop. In the plant that is far-removed from the city or from the manufacturer of the electrical equipment, a prolonged shutdown may ensue. The cost of the shutdown may exceed many hundred times the actual cost of the part to be replaced. In many instances it is almost impossible to find out just what part is required, for the men who made the installation have gone away, the engineer in charge of the plant has gone elsewhere and the part carries no name plate or specification on the blueprint or in the purchasing department files. Correspondence with the manufacturer, a lengthy description and the searching through records at the manufacturer's plant must be undertaken before a spare part can be obtained.

The loss of time and expense involved in all this explains why many companies make it a practice when installing new electrical equipment to make a record of certain things. All name plates are copied so that amperage, voltage, speed in revolutions per minute, serial numbers, dates, etc., are known. This information is easily gathered, and without risk or danger, if obtained before the equipment is placed in service. It is useful information to have if the emergency arises, with its excitement and where fire or explosion may destroy data that have not previously been gathered and filed. These facts are particularly important where a company's purchasing department is hundreds of miles away from the plant and where the plant may be isolated, as is so often the case with pulp and paper plants.

Some companies, however, go further than this. When a new generator is installed, resistance measurements (by means of direct current, measuring the voltage and current, from which the ohms resistance may be calculated) are obtained for such parts as rheostats, field coils, each individual coil as well as the total resistance of the entire field circuit. In many instances the resistance measurements should be taken at a known temperature, so that the resistance readings made from time to time may give an insight into the condition of the winding. For example, one company using a large number of turbo-generators makes it a practice to frequently test the total resistance of the field, in this way having been able to find out when turns were short-circuited.

In many instances a shunt has burned out and when the time came to replace it, ordinarily a simple matter which could be done without going to outside sources for help, it was found that the resistance was not known or that the nominal current carrying capacity was not understood. The

more inaccessible a plant, the greater the dependence placed upon the equipment, the more important it is therefore, to make resistance tests of the apparatus when it is first installed, recording the data so that if accidents occur, repairs may be made or additional equipment ordered that will conform to what was destroyed.

Welding a Difficult Water-Pipe Repair Job

WHERE water supply must be maintained—as with drinking water supply or power house supply and industrial purposes—a leak in a main often creates a very difficult problem. The inaccessibility of the main only serves to multiply the difficulties. In many cases it is impossible to remove the injured section, while the load or other conditions make it impossible to execute the repairs continuously but do them intermittently as conditions permit. Such situations arise in every paper and pulp plant from time to time and an instance of how such a problem was met by the Bureau of Water, Philadelphia, will be of interest.

Recently a leak developed on a 48-inch cast iron discharge main from the Lardner's Point Pumping Station. The pipe led from a 3,500,000 gallon turbine and by means of one-eighth bends, travelled a line below part of the building and then reached the elevation of the exterior piping. A leak had developed on the upper surface of one of the curves and directly under a section of reinforced concrete wall of the station.

The pump was shut down and a place outside of the main cleared for observation. A hole 1 inch wide by 6 inches long was discovered through the curve a short distance from the joint of the adjacent pipe, with a razor edge on the internal periphery, and flaring appreciably to the external surface. The entire top quarter of the pipe had been worn smooth to a distance of 18 inches from the joint. A hole through the joint in question had permitted a jet under 80 lb. pressure to cut through the metal, the sandy soil contact having been of some assistance in cutting through the pipe. The limit of erosion was 2 inches from the joint.

Repairs were made without any difficulty, although to replace the special would have been difficult and it was necessary to do a welding job.

The hole in the pipe was enlarged with sides tapering towards the internal surface and its dimensions, before steel filler was applied, were 3 x 11 inches and 1¼ inches in depth, the thickness of the pipe. A steel plate ⅝ inch thick and 16 x 25 inches was fitted to the inside. This was then fastened with sixteen 1-inch steel studs, eight on each side and arranged in rows of four on the longitudinal axis of the barrel. The studs were welded to the steel plate which in turn was welded at its edges to the pipe. On the outside, a welded envelope varying in depth, approximately ⅜ inch thick, was applied over an area relative to that covered by the plate on the internal surface. As the heating influence on cast iron would not permit continuous repair, it was necessary to limit the period of work to 8 hours. Fourteen days were required to complete the work.

There is an almost endless array of applications where the portable welding outfit proves invaluable around the paper and pulp mill. In many instances, welding offers the only way out. In other cases, it enables repairs to be made on the grounds, within a few hours or days where days or weeks would be required to obtain replacement parts from the manufacturer.

Some Uses for Sheet Iron in the Boiler Room

SHEET iron can be used in many out-of-the-way places in the boiler room, to good advantage. Sometimes it is very difficult to see the level of boiler water, especially on large units where the water level gauge is at considerable elevation. In such instances, a piece of sheet iron placed back of the gauge and painted with white enamel solves the problem. The iron painted with black paint and hung upon the wall often makes a good blackboard, upon which instructions may be left for the night force, upon which the average CO_2, evaporation per pound of coal, and other operating data may be written in white chalk. A piece of sheet iron is often useful for covering a motor exposed to drippings or coal dust. The height of a stoker coal hopper may be often increased conveniently by adding a few pieces of sheet iron, bolted together. This method is frequently a good one to use in making a boiler test, where the hopper may be filled up to hold a given amount of coal, for example, one ton.

Sheet iron can often be used to good advantage for protecting pipe covering. Where steam pipes pass above side doors or above boiler-room entrances and other exposed places, a covering of sheet iron will protect the canvas and the asbestos of magnesia pipe covering that otherwise might be damaged by crane hooks, materials falling upon them, etc. Sheet covering for pipe covers is also a good thing where the coverings are exposed to drippings. Drippings of oil or water do not injure the pipe covering, although they do tend to make the canvas covering rot. Both oil and water do interfere with the insulating properties of the covering, however, and a covering of sheet metal eliminates this loss. Where pipe coverings are located above side doors of furnaces, it is very easy for the pipe covering to be injured by the slice bar as the fireman cleans fires. A wrapping of sheet steel around the pipe for three feet on either side on the side door will eliminate this type of injury.

Another use for sheet iron is around furnace doors. Side doors are installed so that the fire may be examined, that boiler tubes may be inspected for fly-dust, and slagging. The side doors are often installed for enabling refuse and other foreign matter to be dumped into the furnace. They offer a convenient opening for the use of slice bar, for the cleaning of fires, and the removal of clinker masses. Opening these doors during times of a heavy load, subjects the fireman to considerable heat and discomfort. The work is done hurriedly and often without any regard to the surrounding brickwork. The result is that in many instances chunks of brick are knocked off around the side doors. Cracks develop, bricks are knocked out and increased air infiltration occurs. To overcome this situation, it has been found advantageous to install a piece of sheet iron that extends all around the side doors for a distance of anywhere from 10 in. to 2 ft. This sheet iron should be installed as one piece, being placed in position before the side door frames are installed, as the door frames help to hold the sheet in place and at the same time produce an air-tight job. The sheet iron can be held in position, of course, by means of expansion wedges holding the sheet to the brickwork at the outer edge and located not farther than 10 in. or better still, 6 in. apart. Sheet iron used in this way will eliminate all danger to the brickwork around the side doors.

Air Is Costly Fuel

OXYGEN of the air is just as much a fuel as the carbon of the coal. Waste of either means loss of money. Air in its raw state is really quite expensive, for it absorbs heat from the fuel which might be absorbed by the boiler surfaces otherwise; it necessitates sufficient stack capacity to carry it off, thus necessitating a higher first cost for the stack than were a smaller amount of air used.

When mechanical draft is employed, the cost of power varies with the amount of air handled, while a higher initial investment is required due to the equipment.

Loss through excess air is the biggest loss in the power plant, therefore the air should be metered as much as any other factor in power production.

The type of coal burning equipment is a large factor in determining the amount of "excess air" that occurs. Ability to burn maximum coal with minimum draft—meaning minimum investment in stack and eliminating the cost of mechanical blowers—is, of course, a very important factor to be considered. Stokers that maintain a porous fuel bed require less draft than those where the fuel bed is covered with clinker, etc. The draft gauge is the simplest and surest way of knowing just what occurs in the fuel bed and how to remedy it.

Tarry substances if present in oil can be determined by placing a small quantity of oil in a test tube or bottle and adding about 20 times the amount by bulk of 855 deg. Be. gasoline. Allow to stand for about an hour, when the tar and other insoluble will have precipitated in the bottom of the bottle or test tube.

The Month at Washington

PROMPT DECISION IN TARIFF CONTESTS—The Tariff Act of 1930, which was approved, June 17, contains many provisions that should prove beneficial to the business and labor interests of the country. The Treasury Department has therefore set up an appeals and protests division to expedite cases and to hand down prompt decisions in all tariff contests. The department also intends to construe the law absolutely without bias whether such action happens in some particular matter to be for or against either the importer or the domestic interests involved. The most important subject which will be handled by the new division and from which it takes its name, is the administration of the provisions of the new tariff act which authorize the Secretary of the Treasury to decide on appeals and protests by American manufacturers, producers, wholesalers, etc., whether imports are valued too low or assessed at too low a rate of duty. Such decisions are often of vast importance to the revenue and the interests not only of the domestic producers and their employees but of the importers as well. The new division will also administer the provisions of the antidumping act, matters relating to countervailing duties, bounties and many other miscellaneous subjects.

Interstate Commerce Ruling—Paper manufacturers were upheld in complaints of excessive rates in a recent far reaching decision of the Interstate Commerce Commission which finds that transportation charges were higher than prescribed in third and sixth class schedules and were therefore unreasonable. The case arose on the complaint of three New York paper manufacturers (Docket Nos. 19692, 19703 and 19889), declaring that the rates charged by the railroads on wrapping paper and paper bags shipped from Black River, Carthage, Watertown and Dexter, N. Y., to destinations in central States. The complainant companies were Taggart Bros. Co., Inc., St. Regis Paper Co. and the Dexter Sulphite Pulp and Paper Co. The commission held that the rates charged were unreasonable for the future to the extent that they exceeded the third class and sixth class rates prescribed in Eastern Class Rate Investigation.

In Newark Paraffine & Parchment Paper Co. vs. Lehigh Valley R. R. Co., (No. 21713), the commission finds that the rate on wrapping paper, in carloads, from Forest Castle, Pa., to Newark, N. J., were not unreasonable and the complaint was dismissed.

In Bedford Pulp and Paper Co. vs. Chesapeake & Ohio Ry., (No. 19696), the commission finds that rates on bituminous coal, in carloads, from mines in the New River district of West Virginia to destinations in Virginia were unreasonable, and reasonable rates were prescribed and reparation awarded.

Carload rates charged on wood-pulp board from Ontonagon, Mich., to Menasha, Wis., were found unreasonable in another decision and reparation was awarded (Ontonagon Fibre Co., No. 22816).

In Continental Paper & Bag Mills Corp., (No. 19517), upon reconsideration, a finding in a former report that the rate charged on paper bags in straight carloads and in mixed carloads with wrapping paper from Rumford, Me., to Newark, N. J., and Philadelphia and Harrisburg, Pa., were applicable was affirmed, but finding that the applicable rate was not unreasonable was reversed and reparation was awarded.

Rates on wood pulp, in carloads, from Edmundston, N. B., Canada, to Forest Castle, Pa., were found not unreasonable and the complaint was dismissed in Pittston Paper Corp. vs. Canadian National Ry., No. 21960.

In West Virginia Pulp and Paper Co. vs. Baltimore & Ohio R. R., (No. 14530), the commission finds upon complaints involving the general structure of rates on printing and wrapping paper, paperboard boxes and paperboard, in carloads, in central and trunk-line territories and between these territories that the rates for the future would be unreasonable to the extent that they exceeded the sixth-class rates prescribed in Eastern Class Rate Investigation.

Federal Trade Rulings—A paper distributor cannot be classed as a manufacturer, says the Federal Trade Commission in a recent ruling (Stipulation No. 613), where copartners selling and distributing paper products, including tissue paper, were enjoined from any longer using the word "mills" as part of or in connection with their trade name, nor in any other way which might have a tendency to mislead buyers into believing that the partners owned or controlled a mill or factory wherein the products sold by them were made.

In Stipulation No. 622 the use of the word "mills" in advertising was enjoined of a corporation selling and distributing paper products on the same grounds. Carbon paper not manufactured by a dealer cannot be so advertised and sold according to another ruling (Stipulation No. 635), enjoining copartners from carrying the word "manufacturers" and "manufactured by" on their labels, letterheads or stationery so as to imply to buyers that they owned or controlled a factory wherein such carbon paper was being made.

Recent Publications—The Census Bureau announces that according to a preliminary tabulation of the data collected in the Census of Manufactures taken in 1930, that the total shipments or deliveries of wallpaper in 1929, by establishments in the United States engaged primarily in the manufacture of this commodity amounted to 374,967,000 rolls valued at $29,845,000. Fifty-four establishments reported for 1929, as against 53 for 1927. Further data may be had by interested parties direct from the Census Bureau.

The total value of products shipped or delivered in 1929, by establishments engaged primarily in the manufacture of envelopes amounted to $56,454,000. One hundred and fifty-five establishments reported in 1929, as against 153 in 1927.

"The Preparation of Fiber Test Sheets" is the subject of Research Paper No. 190 being a reprint from the Bureau of Standards Journal of Research, Vol. 5, July, 1930. This paper has been prepared by Merle B. Shaw, George W. Bicking and Leo W. Snyder and issued in booklet form by the Bureau of Standards. The article describes the method which has been developed in the paper laboratory of the Bureau and is used in the preparation of fiber test sheets.

Employment and Pay-rolls—The Bureau of Labor Statistics reports changes in employment and pay-roll totals for August as compared with July as a decrease of 2.6 per cent in employment and a decrease of 7.1 per cent in employees' earnings. With 1926 as the basis of 100 we find the following changes:

	Employment			Pay-roll		Totals
	1929	1930		1929	1930	
	Aug.	July	Aug.	Aug.	July	Aug.
Paper and pulp	95.4	93.8	89.9	95.7	94.1	84.0
Paper boxes	94.2	88.0	87.4	100.0	92.1	90.4
Paper and printing	100.6	98.6	97.6	103.1	103.6	99.4

Demurrage Charges on Undelivered C.O.D. Packages—According to the Act of May 23, 1930, which becomes effective October 1, 1930, under such regulations as the Postmaster General may prescribe, any C.O.D. parcel which the addressee fails to remove from the post office within 15 days from the first attempt to deliver or the first notice of arrival at the office of address, may be returned to the sender, charged with the return postage, whether or not the parcel bears any specified time limit for delivery. A demurrage charge not exceeding 5 cents per day may be collected when

delivery has not been made to either the addressee or the sender until after the expiration of the prescribed period. Any demurrage charges must be paid by either the addressee or the sender before delivery. When a C.O.D. article on which demurrage has accrued is not accepted by the addressee, the amount of demurrage charges shall be paid by the sender upon return of the article to him. No change is made in the privilege accorded senders of C.O.D. articles of having such mail held at post office of address for not exceeding 30 days before being returned, if not delivered. Such articles may not be held in excess of the retention periods specified in the senders' instructions, not exceeding thirty days, regardless of requests of addressees. Copies of the regulations may be had by writing the Third Assistant Postmaster General, Division of Registered Mail, Post Office Department, Washington, D. C.

Semi-Annual Retail Credit Survey—Preliminary data on retail credit in the first six months of 1930 have just been issued by the Department of Commerce, based on reports from 547 establishments in 24 cities. The results are of interest, not only for their bearing on general credit conditions and credit trends, but particularly to the individual business man who wants figures on similar establishments to compare with his own. A decline in sales is noted of 6.7 per cent in comparison with the corresponding period last year. Credit sales increased slightly in proportion to cash sales during the period studied. Open credit sales or regular charge account represented 48.3 per cent of total sales in 1929, and 48.9 per cent in 1930.

Paper Notes of Interest—The Alabama Polytechnic Institute and the Bureau of Standards are making a co-operative research and fundamental study of the chemical reactions involved in the sulphate pulping process used for the production of the southern kraft papers which has attained large proportions in recent years. More definite information on the complicated chemical reactions of this process is sought to extend its field of usefulness. Such information should be beneficial in several respects such as in the production of by-products, in the production of fibers having a greater variety of use, in the use of a wider variety of fibrous materials, and in more complete recovery of the pulping chemicals.

There are two companies using cornstalks as raw material for paper pulp and wallboard, and they can utilize the stalks from more than 50,000 acres a year, says the Bureau of Standards in reply to an increasing number of inquiries it has received as to possible utilization of the stalks. The use of cornstalks in making paper proved practicable about 20 years ago, says the Bureau, but the comparatively high cost of making cornstalk paper has prevented an extensive development. The prospects are that as the timber supply declines and the cost of making paper from wood rises, production of paper from cornstalks will become commercially profitable. But this probably will not take place for some 15 or 20 years at least.

Swedish sulphate mills are planning a reduction in output.

The German pulp and paper market has been affected very seriously by the widespread business depression.

A slight reduction in pulpwood cut is noted in New Brunswick.

The Netherlands foreign paper trade is showing an increase.

Finnish exports of paper and pulp are also reported as increasing.

A new mill is being built in Hungary for making paper from straw. By a new Swedish method 45 to 47 per cent of cellulose can be extracted from the straw and the paper can be produced without the addition of lime. This method produces long, elastic and white fibers and has the additional advantage of retaining the lime in the straw pulp.

How and to Whom Do Manufacturers Sell—The responses to the distribution of sales inquiry in the census of distribution questionnaire will answer the question of how and to whom manufacturers sell their goods, says the Census Bureau. It will also show to what extent manufacturers are engaged in the wholesale and retail trade for the first time. The information obtained will show the manner in which and the type of channel through which manufacturers sell their goods. It will show how they use manufacturers' agents, selling agents, brokers and commission houses, geographically as well as industrially and by size of establishment. The results of this "Sales Distribution" inquiry thus far have been most gratifying and illuminating, and the final compilations are confidently expected to reveal beneficial information on the trend in the distribution field as well as furnishing comprehensive data on wholesale and retail merchandising activities of manufacturers.

Suppression of Inventions

The patents committee of the management division of the Technical Association of the Pulp and Paper Industry contributes the following information indicative of one way in which an invention may be protected. Other statements will be issued from time to time.

There are only three possible ways of preventing others from availing themselves of a new and valuable discovery. Probably the simplest, though not always the least expensive, is to suppress the invention entirely. This method has the obvious drawback that so long as the discovery is kept secret, the inventor is also deprived of all possible benefit. Furthermore, there is always the danger that other workers in the art will rediscover or stumble across the invention, in which case the first inventor may forever lose his rights. For the courts have often held that a second bona-fide inventor is entitled to prevail against one who attempts to keep his discovery secret. Hence, this expedient is rarely resorted to except by inventors in adverse circumstances and by those who feel that their discovery is so far ahead of the art that the seventeen-year monopoly of a patent would be insufficient to secure to them a commensurate reward.

Illig's invention of rosin sizing may be cited as a classic example of a discovery that came before its time. As related in S. R. Olsen's article (Technical Association Papers 1929, Page 112) Illig made his revolutionary contribution to the paper industry in 1807 and although he published a brochure on the subject, his process did not come into actual use until 1820. And even then practical papermakers did not realize its full significance and insisted on applying erroneous principles for nearly a century, in spite of Illig's clear and concise description.

Many precocious inventors who find themselves in Illig's situation, file an application for a patent as soon as possible and by taking advantage of every technicality and delay allowed by law, try to keep it pending until a real need for the invention is demonstrated. Formerly it was possible to keep an application alive in the Patent Office for as long as thirty-six years and a few inventors have thus found it possible to dominate their arts for years after they had been independently developed by the work of others.

Changes in the patent laws have cut down considerably the time that an application can be kept pending. However, it is still possible to keep a case alive for as long as five years, because the personnel of the Patent Office is totally inadequate in numbers to give prompt attention to the hundred thousand applications that are filed annually. Recent increases in salaries and in the number of examiners should go a long way in further cutting down the time that an application can be kept pending.

Horton Steelworks, Limited, Takes Over Sale of Barking Drums

The Horton Steel Works, Limited of Bridgeburg, Ont., has acquired from the Canadian Barking Drum Company, Limited the rights to sell and service, as well as to manufacture, U-BAR barking drums and accessory equipment. Formerly, the Horton Steel Works, Limited handled only the fabrication of the equipment.

The U-BAR drum, which is made in both chain suspension and trunnion types, has become popular since its introduction in 1915. More than 350 installations have been made in 12 different countries, including Canada, Newfoundland, England, United States, Mexico, Japan, Norway, Sweden, Finland, Russia, France and Holland.

ADVERTISING PAGES REMOVED

PACIFIC COAST

WASHINGTON

Directors of the Crown-Willamette Paper Co., at a meeting held in August, declared the regular quarterly dividend of $1.75 a share on the first preferred stock payable October 1 to stockholders of record September 1. The directors also declared a regular quarterly dividend of $1.50 a share on second preferred stock payable the same dates. This was the annual meeting and all directors were reelected.

Wm. Einzig, formerly purchasing agent for the Zellerbach Paper Co., and for the past six months associated with the Weyerhauser Timber Co., is to be associated with O. C. Schoenwerk, engineer from Chicago, who will have charge of the construction on the new 150-ton bleached sulphite pulp mill which as previously reported, is to be built at Longview. Mr. Schoenwerk is not unknown in pulp and paper mill circles in the northwest as he was interested in the plans and designs of the recently completed plant of the Olympic Forest Products Co. at Port Angeles.

The Pacific Coast Paper Mills Co. plans a $500,000 expansion program within the next 18 months, according to Paul Herb, sales manager and secretary of the company, Bellingham. It is planned to raise the capacity to 60 carloads a day and triple the pay-roll which would reach 175 under the enlargement program.

Paper Mill Families United

Dorothy Leadbetter, daughter of Mr. and Mrs. Frederick W. Leadbetter, was married August 26 to Nils Gottfried Teren of New York, at the Leadbetter home, Fern Lodge, near Camas.

The marriage links two families of importance in the paper industry. Mr. Teren is manager of the kraft mills of the St. Regis Co. and recently spent some time in the West with business connected with the company's purchase of the kraft pulp mill of the Union Bag and Power company at Tacoma which eventually has been acquired by St. Regis and is operating under that name. Mr. Leadbetter, father of the bride, is an extensive paper mill owner, having under his control a number of mills on the coast.

Formulate Plans for Hoquiam Pulp Mill

A group of pulp and paper men held a meeting with Mayor Martin F. Smith of Hoquiam August 29, at which time plans were discussed for a new 100-ton pulp plant in that city which would represent an investment of between $1,500,000 and $2,500,000. It is said that the proposed plant would require 10,000,000 gallons of water daily which the city would arrange to buy from the industrial water system of Aberdeen.

Those included in the party making a survey were: J. Anderson, New York; T. Teren, Holyoke, Mass; A. B. Galloway, E. E. Hoitola and B. T. McBain, Portland.

Negotiations of the proposed company concern two sites and if one of these can be obtained at a satisfactory price and the water supply assured, work might possibly start this fall, it is stated.

The Crown-Willamette Paper Co. made application several months ago to the Federal Government for permission to build a dike across Camas slough. This permit has now been granted and the company will create a log storage pond for its Camas plant.

Paper Company Asks Federal Investigation

A wood pulp inquiry by the treasury department was requested and a preliminary investigation started late in August when a petition was filed by the Puget Sound Pulp & Timber Company, operating plants at Everett, Anacortes and Bellingham, asking that something be done about the dumping of pulpwood into the country by foreign countries. The petition asks regulation of pulpwood dumping by Sweden, Norway, Germany, Finland and Canada.

The complaint alleges that companies in all of these countries except Canada, are buying low-priced material from Russia, processing it and dumping the wood pulp into this country. Canada was not charged with buying Russian material. The petition indicates that Pacific northwest interests are seriously menaced by this practice of foreign importations, that investments here total $72,000,000 and employ about 7,500 men in all departments of the industry and that manufacturers of unbleached pulp in this region have practically closed their plants with no prospect of reopening until the alleged condition is improved.

"In view of the fact that warehouses are full of pulp they will have to dispose of this tonnage before operation can be resumed, and we fear that mills will have to be closed," the petition states. In this case it is pointed out that the unemployment situation would result in intolerable conditions. On the other hand, if the Pacific region were allowed to produce pulp on a basis of fair competition with foreign countries under the protection that the antidumping law provides, the manufacturers in this section believe that they could gradually work up to a position of supplying a large portion of the country's needs for this semi-raw material.

Other industries affected besides the Puget Sound Pulp & Timber Company are named as the Shaffer Box Co., Tacoma; Spaulding Pulp and Paper Co., Newburg; Sitka Spruce Pulp & Paper Co., Empire; Columbia River Paper Mills, Vancouver; Crown-Willamette Paper Co., Camas; Grays Harbor Pulp & Paper Co., Hoquiam; Longview Fiber Co., Longview; Rainier Pulp & Paper Co., Shelton, and Olympic Forest Products Co., Port Angeles.

In the week or two which has elapsed up to this time since the petition was submitted by the Puget Sound Pulp & Timber Co., there has been considerable talk in the northwest about some kind of organization which might form to ship pulp or pulpwood to the Atlantic coast by steamer. Some reports are to the effect that a test shipment might be made this fall to prove whether such a permanent plan would be feasible and whether it would help to solve the problem of Russian competition from which as yet the treasury department has offered little relief, according to northwest lumber and paper mill interests.

CALIFORNIA

Appoint Paper Trade Ass'n Committees

E. A. Doran of San Francisco, president of the Pacific States Paper Trade Association, who recently appointed the newly established Mills Relations Committee, has now completed his entire roster of committee set-ups.

L. A. Colton of the Zellerbach Paper Co., heads the convention program committee for next year, with headquarters in San Francisco; C. A. Bell, Portland; J. R. Coffman, Los Angeles; J. Y. C. Kellogg, Seattle and W. S. Gilbert, Spokane, will serve also on this committee.

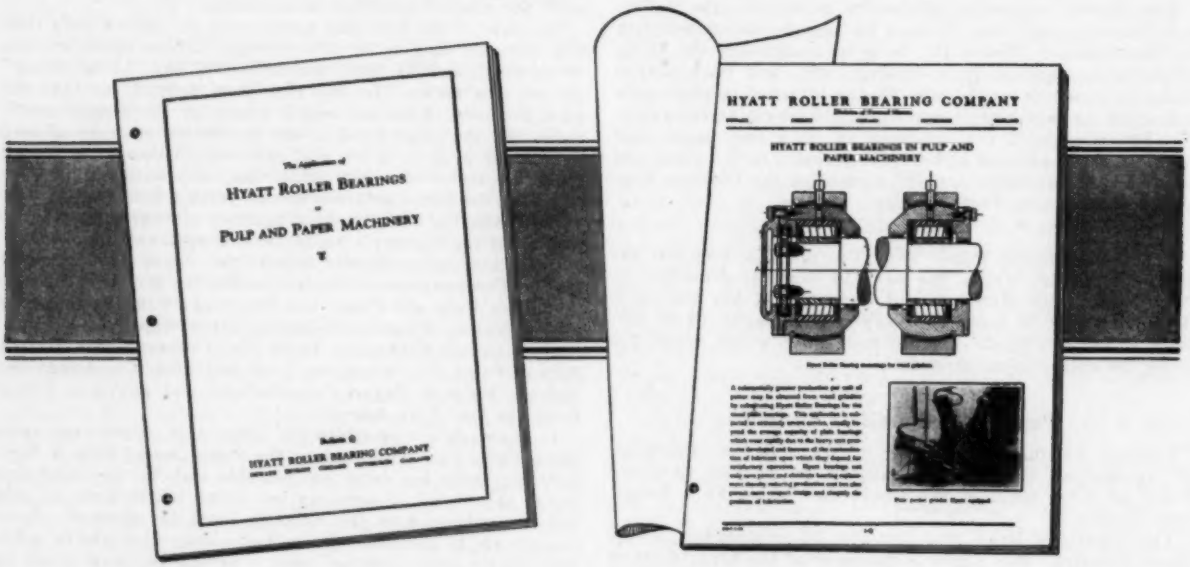
The new plant of the Link Belt Co. at Paul avenue and Bayshore highway, San Francisco, has been completed and includes a two-story office building, a two-story warehouse 80 by 120 feet and a manufacturing building containing a machine shop, steel plant and auxiliary departments on a seven and a half acre site. Nothing has been omitted in the plans for this enterprise that will contribute to the efficiency of the company's service.

Crown-Zellerbach Corp., San Francisco, has purchased the Standard Paper Co. of that city and will merge the company with their own for the distribution of paper products.

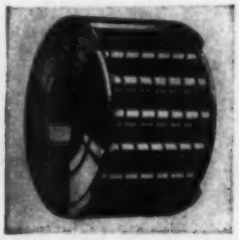
H. L. Stillwell of Fibreboard Products, Inc., San Francisco has returned from a six months trip to Europe where he visited almost every country of importance in the interest of fiber board boxes for Pacific European shipping.

YOURS for the asking

An engineering manual on the application of Hyatt Roller Bearings is now ready for distribution. It contains numerous typical designs which will serve as guides to the correct application of Hyatt bearings, and a summary of the advantages which result from their use.


HYATT ROLLER BEARINGS
PULP AND PAPER MACHINERY
HYATT ROLLER BEARING COMPANY
HYATT ROLLER BEARINGS IN PULP AND PAPER MACHINERY

This new publication may be had by any machinery manufacturer, mill executive, or any other person interested. It will familiarize you with the possibilities of Hyatt application. Write for it.



Machinery builders and mill men interested in modern equipment and modernization of existing equipment will find this pamphlet useful and timely. It is based on the knowledge obtained from years of experience with many successful installations and reflects a thorough understanding of mill requirements. Its suggestions will appeal to practical men whose concern is the building and maintenance of machinery capable of profitable operation.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

OREGON

Investigation of Northwestern Co.

The further investigation of affairs of the Northwestern Pulp & Paper Co., whose promoters promised a mill at Astoria which did not materialize, was carried on in Portland late in August under a special grand jury. The principal complaint is that the company sold about $300,000 in stock, largely to Oregon residents, and most of this was spent in promotion work, it is alleged.

This company which was organized about three years ago has been the subject of scrutiny for some months because no prospect of a building program was evident.

During the week of the special jury investigation four creditors of the incorporation filed an involuntary petition in bankruptcy against the company in United States district court, asking that it be adjudged bankrupt to prevent it from disposing of its assets before creditors have been given an opportunity to share them.

Another angle contained in the bankruptcy petition charges that members of the board of directors of the company had formed another corporation known as the Oregon Sulphite company, which was endeavoring to take over the assets of the former company through creditors who have taken judgment against it in circuit court.

The petitioning creditors are the Finnish Lutheran Book Concern, Astoria, which alleges the pulp and paper company owes for printing and stationery; Clifford Barlow, Warrenton, who alleges the company owes him for advertising; J. T. Allen Agency, Inc., Astoria, claiming a sum due for insurance and Hazel J. Thompson, Portland, for labor. It is claimed that the firm of Thomas & Meservey, timber cruisers, Portland, has been permitted to take prior claims of $1,000 through a judgment in the circuit court of Multnomah county taken by default; that the corporation's officers and members of the board of directors permitted Thomas & Meservey to secure an execution of judgment on all the timber lands of the corporation, amounting to 4,000 acres of timber of an approximate value of $50,000; and that the corporation allowed the property to be advertised and sold by the sheriff of Multnomah county for the amount of the judgments and costs.

The corporation has made no effort to redeem the property or take up the sheriff's certificate issued to Thomas & Meservey, but instead, in order to delay creditors, members of the board of directors of the Northwestern Pulp & Paper company have caused to be organized the corporation specified as the Oregon Sulphite company and that they became stockholders and members of the board of directors, the petition alleges. The directors of the sulphite company then, the petition continues, secured an assignment of the sheriff's certificate from Thomas & Meservey, which, when not redeemed, would give them title to the timber lands and mill site of the pulp and paper company in Astoria.

The petition recites further that these acts were done when the respondent, the pulp and paper company, was insolvent, and for the purpose of securing title for the Oregon Sulphite company a deed for the property for little or no consideration and that unless the respondent is declared bankrupt the petitioners and other creditors will be defrauded out of their claims.

The respondents will have 20 days to file an answer to the petition with the clerk of the United States district court.

The factory of the F. C. Stettler Box Co., Portland, was almost completely destroyed by fire August 11, causing a loss of more than $350,000, completely covered by insurance. F. C. Stettler announced almost immediately that the factory would start rebuilding, and temporary quarters were taken at Interstate avenue and Thompson street, where necessary business will be handled for about four months while construction of the new plant is under way. About 150 persons were thrown out of work and at a season when the plant was crowded with orders.

The Western Board Products Co., Salem, went into production of binder board in its newly constructed plant late in August. Using pulp screening and flax products, the plant will make about eight tons of the binder board daily, using a process that includes digesters, beaters and paper machines. F. Puttaert of San Francisco has been engaged as manager of the plant.

The fast-growing city of St. Helens on the lower Columbia river where pulp and paper industries are responsible for big payrolls, is becoming so important that a special event was featured by the Portland Advertising Club on August 20 to celebrate this progress. Included in the guest list were L. A. Linville of the Jaite Bag Co.; Irving T. Raught and C. W. Sherman, of the St. Helens Pulp & Paper Co.; and A. E. Millington of the Fir-Tex Insulating Board Co. These men spoke briefly at this luncheon telling something of the highlights of the industry they represent.

Imported Pulpwood Injurious to Coast Mills

G. M. White, statistician of the Crown-Zellerbach Paper Co., speaking before the Kiwanis club of Portland August 20, touched emphatically on the problem of Russian pulpwood importations. He said that although the embargo on shipments of Russian pulp had been removed, the coast industry intended to fight against these shipments and that unless something was done to relieve the situation there would be serious consequences to the industry in the district here.

Mr. White pointed out that in 1929 there were 302,900 cords of convict pulpwood shipped from the Archangel section of Russia to paper mills in the northeastern part of the country. So far this year, he said, 280,000 cords have been contracted for and 1,300,000 cords are said to be ready in Russia for shipment to the Atlantic coast.

Edward R. Brown, also of the Crown-Zellerbach company, gave a brief resume of the paper industry on the west coast. Paper mills in the Portland trade district according to Mr. Brown now spend $5,000,000 annually, but this payroll will be lost if convict pulpwood offers such competition to the northwest as is indicated by the recent move of the treasury department. As an example of the money being spent in the vicinity of Portland, Mr. Brown cited the $3,000,000 expansion program of the Crown Willamette Co. at Camas, Wash.

The Portland Envelope Co., subsidiary of the Inter-Mountain Paper Co., of Denver, will spend about $5,000 in remodeling a building 100x100 feet in dimensions at Grant and East Eighth for the Pacific Northwest headquarters of the company. A 20-year lease has been taken on the premises, according to manager A. A. MacFarland.

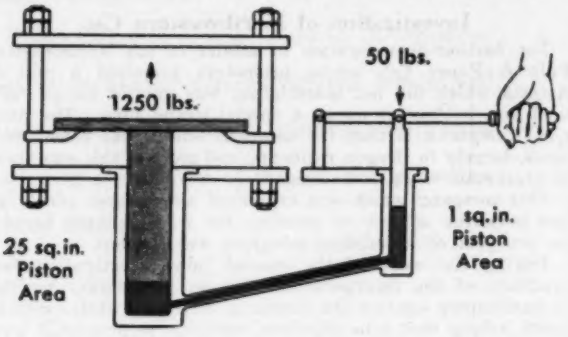
R. S. Wertheimer, of the Longview Fibre Co., general chairman of the Pacific coast section of T. A. P. P. I., Ralph Reid of St. Helens Pulp & Paper Co., vice-chairman and H. K. Benson, of the University of Washington, Seattle, are working with the various committee department chairmen on the program for the fall meeting of the sectional group to be held in Portland, with the date tentatively considered for October 4.

George P. Berkey, vice-president of the Crown-Willamette Paper Co., with offices in Portland, has been elected to the board of directors of the First National Bank, succeeding Joseph Simon, former United States senator, who has held a position on the board since 1914 and who recently resigned. Mr. Berkey was associated with the Consolidated Power & Paper Co., Wisconsin Falls, Wis., prior to coming to Portland in 1927 to accept his present position.

The first shipment of Fir-Tex insulating board to go by water from the new plant at St. Helens, was sent August 11 to Los Angeles on the steamer Wallingford.

Harold O. Bragonier has been appointed to the Santa Rosa office of Blake, Moffitt & Towne as representative. He takes the place of Milton I. Smith who is now with the San Francisco office.

PASCAL'S LAW applied to Nordstrom Valves



THE PERFECT APPLICATION OF A PRINCIPLE

MERCO

LONG AGO Pascal gave to the scientific world the law or principle which explains the transmissibility of pressure in fluids. In brief it states that "if the pressure at any point within a rigid vessel be increased there will be an equal increase of pressure at every other point." Hence in the hydraulic press a relatively low pressure in the smaller cylinder transfers an equal pressure to every unit of area in the larger cylinder and the resultant upward force becomes tremendous. Likewise in the Nordstrom Valve Pascal's Principle has a perfect application. A small force applied to lubricant screw creates a great upward pressure to the lower end of the valve plug and prevents sticking under any working condition. A perfect seal around the plug is maintained.

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El Paso - 111 So. Virginia St.
Houston - Petroleum Bldg.
Los Angeles - 508 So. San Pedro St.
New Orleans - Masonic Temple Bldg.
New York - 11 W. 42nd St.
Pittsburgh - Oliver Bldg.
St. Louis - 217 N. Eleventh St.
San Francisco - 340 Bemmone St.

Agencies:

Denver - Republic Supply Company, 922 Continental Oil Bldg.
Honolulu - E. W. Hussey Co., Ltd., Port & Queen Streets.
Manila - E. W. Hussey & Co., P. A. Lhuillier Co., Pasay Extension Bldg.
Philadelphia - Brown, Wilcox & Company, 1600 Arch St.
Portland - Anthony C. Wilgard, 318 Pittock Block.
Salt Lake City - National Equipment Co., 151 West 2nd South St.
Tokio - E.V. Hussey & Company, 258 S. Bradley Street

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Made in all sizes for various purposes. Working pressures 50 to 3000 lbs. per square inch.

NORDSTROM VALVES

WISCONSIN

Expectation of Normalcy Among Mills

Arrival of the fall season has given a much better tone to the paper industry in Wisconsin. Some of the mills where lack of orders caused a shut-down or curtailment of working days are getting things in order to resume with the expectation that another 90 days will see an approach to normal production.

July and August presented a difficult situation for some of the mills to meet. They were able to keep operating until the usual summer slump came along. With practically no orders on the books, they found it necessary to shut down until enough business accumulated, or to adopt a much curtailed operating schedule each week. This situation has made 1930 the worst season in years for a few mills, but the departure of the dull months brings a new note of optimism. Orders are beginning to come in from jobbers who were reducing stocks and buying from hand to mouth and the demand is expected to be steady from now on until the holidays at least. Should general business make any marked strides towards normalcy, the mills have no fear of further protracted suspensions.

Only a few mills in Wisconsin have been thus affected. The trend in the last few years has been away from newsprint and cheap grades, and into specialties and high grade bond and book papers. The result is that diversified markets have been to the industry what diversified farming and diversified manufacturing have been to Wisconsin as a whole in keeping some semblance of stability during an abnormal time. Most of the specialty plants have been running at their usual capacity, and some of the larger ones report a steady increase in volume, and sales records that eclipse a year ago.

Organization has now been completed of the corporation which will take over the defunct Menasha Paper Mills Company, Menasha. The new company will be known as the Menasha Paper Corporation, with W. H. Nelson as president, L. J. Knapp as vice-president, and W. H. Reynolds, secretary-treasurer. Mr. Nelson was secretary-treasurer of the former company and also is secretary of the Menasha Wooden Ware Corporation. A complete new power unit will be built and a new rotary room will be added. The mill will continue to produce strawboard on its two fourdriniers of 63 and 74 inches, with 30 tons daily capacity. Operations are expected to start quite soon.

Preparatory to the manufacture of light cartons, the Ahdawagam Paper Product Co., Wisconsin Rapids, is erecting a one-story addition 110 by 200 feet, concrete and steel, to house machinery and equipment purchased recently from the bankrupt Wisconsin Carton Co., of Stevens Point. The company formerly made only heavy carton products, but will add a line of food cartons, display boxes and the like. Raw materials will be made by the Consolidated Water Power and Paper Co., of which it is a subsidiary. About $90,000 will be spent for the building and equipment.

Increased operating and storage facilities will be provided for the International Wire Works, Menasha, as the result of building operations. The company is erecting a large addition and has the walls almost completed. The structure will be ready for use in about two months.

At the Allen Waste Paper Co., Menasha, a second story is being added to the warehouse. Sorting and grading rooms will be established there and will provide facilities needed by this fast growing new concern.

Fresh water will be supplied the mills of the Nekoosa-Edwards Paper Co., Nekoosa and Port Edwards, through a pipe line 19,000 feet long now under construction. Water will be conveyed from Nepco lake, an artificial body created when the company's new power dam was constructed recently. Pre-cast concrete pipe 42 inches in diameter will be used.

Construction has been started by the Kimberly-Clark Corp., Neenah, on two more additions to its recently acquired Lakeview mill. One is a pulp storage unit two stories high and 60 by 150 feet in size. The second is a machine shop 50 by 60 feet. Both are of fireproof construction and will cost approximately $75,000.

Organize to Prevent Forest Fires

Forest fires and additional federal forest areas continue to occupy major attention in Wisconsin in the face of fast dwindling timber and pulpwood sources. The drought of the present summer has caused many fires covering large areas, some of them getting into good stands of timber before they were stopped.

Many leading timber owners and operators, including paper mill officials, met at Ashland, recently to consider the fire situation. A committee was named to promote co-ordination of federal, state, county and private fire prevention and control activities. J. B. Nash, woods manager of the Nekoosa-Edwards Paper Co., was among those named. Mr. Nash proposed modern fire fighting equipment similar to that used in cities except for its special adaptation to forestry work.

Resolutions were adopted at the meeting to request at least $1,000,000 from the Wisconsin legislature at its next session for fighting these fires. This sum is considered generally adequate, although protection must be given to 14,000,000 acres of land. Proposals were made that the State purchase lands along highways so as to keep them clear of slashings, since many of the fires start because of carelessness of the traveling public. Other suggestions included use of highway patrol crews for vigilance and fire fighting, and the use of airplanes for detection. Guy Waldo, of the Flambeau Paper Co., Park Falls, Wis., urged immediate building of roads so as to give quick access to all areas.

The latest proposal on federal forests is to set aside an area which would include 268,000 acres in Oconto county and 13,000 acres in Marinette county. The Government will be able to purchase these lands at $1 to $2 an acre and set them aside for forest preserves and tree growing. Another proposition comes from Ashland, Price and Sawyer counties, where a movement is on foot to set aside 190,000 acres of tax delinquent lands of a federal preserve.

Traffic News

Paper mills of Wisconsin and the railroads both have been unusually active, the former to adjust discriminatory rates and prevent increases or unjust changes, and the latter to equalize freight rates and gain some higher ones where the carriers think they are necessary. Several cases are before the Interstate Commerce Commission on these matters.

In one decision of the commission, the rate on printing and writing paper was increased from 17 to 20 cents a hundred pounds. This ruling was part of a consolidated case involving the general structure of rates in central and trunk line territories. This was somewhat of a compromise, as western carriers sought 21.5 cents from the Fox River Valley group. Grouping of mills for rate-fixing purposes will be continued in Wisconsin.

Another decision ruled that freight rates on paper from Hamilton, Ohio to Oklahoma favored Wisconsin cities, because the Fox River Valley group has been enjoying tariffs 5 to 8½ cents lower than the Hamilton rate. Complaint was brought by the Champion Coated Paper Co., and the Champion Fibre Co., of Hamilton.

On the other hand, local mills, through the Wisconsin Paper and Pulp Manufacturers Traffic Association, are asking the Interstate Commerce Commission to prescribe lower rates on newsprint from Wisconsin to the southeastern

In Noble & Wood Jordans It's "Precision"

Timken Bearing Equipped Precision Jordan built by The Noble & Wood Machine Company, Hoosick Falls, New York.

Therefore "Timken Bearing Equipped"

Precision performance in a Jordan engine mainly means that the plug must be kept exactly centered in the shell. If the plug shaft is allowed to get out of alignment, unequal wear on plug bars and shell lining results, causing a pronounced falling off in uniformity of material and volume of output.

Because of Timken tapered construction, extreme accuracy of manufacture, frictionless operation and Timken-made steel, Timken Bearings assure permanent plug shaft rigidity and alignment under all operating conditions. Refinement of stock is thereby always under control and production can be kept at full capacity.

Furthermore, filling replacement, which ordinarily constitutes one of the heaviest items of Jordan maintenance, is reduced to a minimum, power demands are considerably lowered and lubrication costs cut to the vanishing point.

And, finally, through Timken capacity to carry both radial and thrust loads—singly or in any combination and in any degree of severity—the stamina and life of the machines are greatly increased.

It's the same story of Timken ability to lick Industry's toughest jobs—wherever wheels and shafts turn. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**

states. It is contended that rates have been preferential to New England, New York and Canada for some time, resulting in losses of business which Wisconsin and neighboring mills, 42 in all, would like to regain. Rates cited show that shipments from Carthage, N. Y. to Danville, Va., are 41 cents; from Corinth, N. Y. to this point, 47 cents, and from the Fox River Valley of Wisconsin, 57.5 cents. Railroads are asking an increase to 62.5 cents from Fox river territory, and mills ask a reduction of 9 cents to 40 cents. It is pointed out that Wisconsin mills produce 297,300 tons of newsprint a year and more would engage in this line if freight rates were equitable.

Safety records of the Consolidated Water Power and Paper Co. continue to reach new heights. The mill at Biron has operated since January 22 without a lost time accident among its 273 employees. The Interlake mill at Appleton, likewise has run since February 16 with no lost time accident in its force of 205 men. The company has not had a fatal accident since February 14, 1928.

Paul Sievert has been made manager of the Marinette and Menominee Paper Co., Marinette, Wis., a subsidiary of the International Paper Co. He formerly was superintendent, and succeeds W. W. Hinnenthal, who has been made manager of the company's new bag factories at Mobile, Ala., and Bastrop, La.

The Combined Locks Paper Co., Appleton, lost out on its protest to the Government against awarding a pulpwood contract in southern Colorado to the International Paper Co. The deal was for a cut of 2,000,000 cords at a price of $5,500,000. The former concern offered a higher price on a portion of the cut and wanted the contract divided.

The Dells Paper and Pulp Co., Eau Claire, is considering construction of a filtration plant in order to obtain a purer water supply. Several test wells were sunk in an effort to obtain water from that source but too much iron and manganese was evident. Not enough pure wells were located to give the required supply of 5,000,000 gallons daily.

Frank B. Whiting has been elected to the board of directors of the First National Bank, Menasha, to fill the vacancy caused by the death of his father, George A. Whiting, who founded the bank. Mr. Whiting's office as president has been filled with the election of Carleton R. Smith, Neenah.

Arthur Bouffard, of Appleton, and Miss Gladice K. Olwell, of Green Bay, were married last month. Mr. Bouffard is widely known in the paper mill area because of his work as instructor of pulp and papermaking in classes conducted among mill employees under auspices of vocational schools.

Enlargements are being made at the Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis. One addition to the mill is two stories and 75 by 108 feet in size. The others are four one-story buildings 14 by 122, 27 by 56, 19 by 32 and 25 by 28 feet. The expenditures will enable the company to overcome cramped operating quarters and provide more storage. The improvements will cost about $100,000.

Most of the construction work has been completed by the George Banta Publishing Co., Menasha, on the third story unit which has been added to a portion of the main building. Printing equipment is being installed in this section preparatory to increased output.

Paper mills were well represented at a "Human Relations in Industry" conference held for a week in August at Lake Geneva, Wis. Employers of labor enjoyed a combined study and camping period there while they discussed this question. The Y. M. C. A. joined with industrial leaders in arranging the program. On the list of speakers were: G. A. Pennock, Chicago; L. A. Hartley, Akron, Ohio; Ordway Tread, New York; Arthur T. Morey, Granite City, Ill.; Charles M. Mills, Cleveland, Ohio; W. S. Kendrick, Chicago, and Dr. Samuel W. Grafflin, New York.

◆ MICHIGAN ◆

Cost and Technical Association Meets

The regular August meeting of the Kalamazoo Valley Cost and Technical Association of the Paper Industry was held at LaBelle Hotel, Gull Lake.

During the afternoon, a number of the members played golf, thus placing themselves in line to participate in the finals to be played in September. Following the golf game and preceding the business session, a sumptuous dinner was served.

Buying on Specifications

The first speaker of the evening was C. C. Schneider, chemist, Hawthorne Paper Co., Kalamazoo, who spoke on "Buying Materials on Specifications." Mr. Schneider opened his remarks with a statement to the effect that the consumers of paper are able to take advantage of the present highly competitive conditions to hold the paper manufacturer rigidly to specifications, and also tend to raise those specifications. The customer sets the rules, while when the paper manufacturer buys pulp, the pulp seller first lays down rules of testing.

Among the qualities demanded in paper are: good formation, uniform finish, good and uniform color, highest possible physical tests, and the usual demand is that all these characteristics run absolutely uniform in one and the same shipment, and also from one shipment to the next. The papermaker to meet these requirements, should, and must, have raw materials which will run uniform.

Mr. Schneider reported that tests made by him have shown a wide variation in quality of pulp even in separate bales from the same car, and the variation from car to car has been found so great as to make the material useless.

The means of testing and specifications for buying non-fibrous raw materials have been pretty well standardized and they may be obtained in quite uniform condition.

Sources of Waste

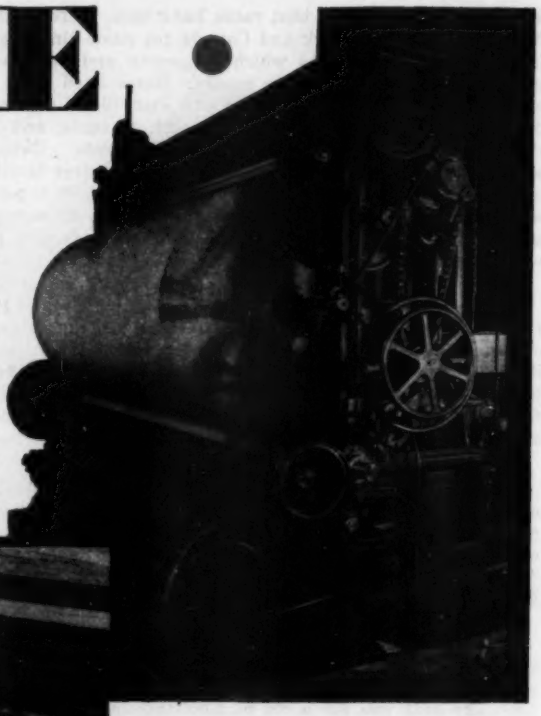
The second subject on the program was "Sources of Waste." Elbert Milham, of the Bryant Paper Company, had been appointed to speak on this subject, but in his absence, President Whittington took charge. He mentioned three sources of waste the monetary cost of which is very hard to figure, but if properly controlled would mean an ultimate saving. The first of these items is boiler blow down, where a great deal of valuable hot water finds its way into the sewer. Second, the employment of either too many or too few men causes labor waste. The employment of too many men results in loafing; the lack of a sufficient amount of help prevents getting the work out on time. The third source of waste is the careless inspection of finished cartons, the girls who perform this work having been known to throw away bundles of cartons where only a few should have been rejected.

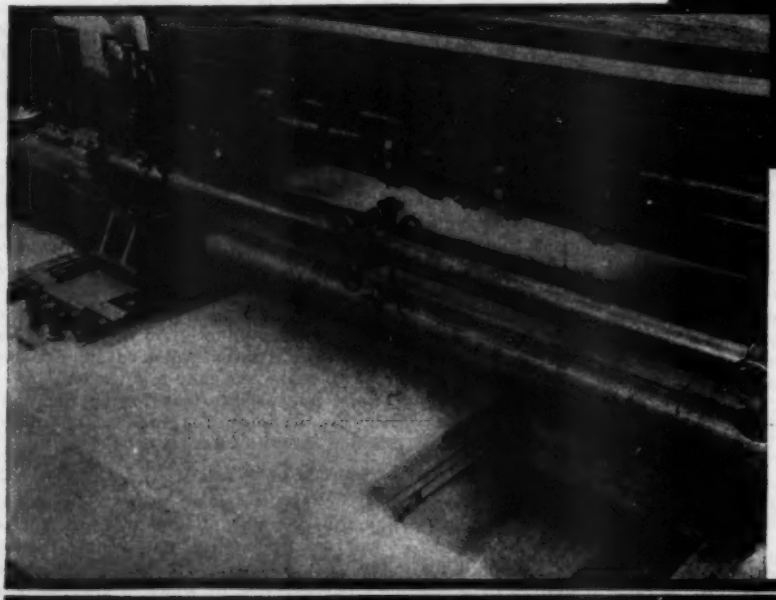
Another source of waste in the manufacture of coated paper is the apparent inability of paper mill and coating mill superintendents to work together and co-operate in eliminating the poor paper which produces seconds after coating. An instance was reported that one company operating several coating mills found that when waste and seconds were heavy in one mill, the same condition occurred simultaneously in the other mills, indicating a lack of supervision in the paper mill.

Another source of waste resulting from carelessness is damaged rolls, due to dropping or bumping while in storage. This not only causes an initial loss on account of the cracked or jammed end, but generally the men in slabbing this off will take off an additional inch for good measure.

UNIQUE

This Langston Slitter is the only installation of its kind. First—it is used as a winder at the end of the board machine. Then, while sheets are being made, the Langston is rolled forward





on a special track to the position shown below. Here it becomes a rewinder and in both cases every roll is tightly wound, square-edged and free from dust.

Samuel M. Langston Co. ◆ Camden, N. J.

The installation of improper equipment or lack of foresight in not making allowances for future expansion when erecting buildings and installing machines, may necessitate some expensive alterations later, or perhaps seriously curtail production, thereby causing a financial loss to the company.

Shrinkage is a prolific source of waste and in one instance where an intensive study of the problem was made, it was found that the largest part of the shrinkage was due to the old paper stock coming to the mill, instead of being in their own processes. This reverts back to the first subject. Paper mills will have to get together to control the quality of the raw materials they are buying.

The meeting proved to be a very interesting and profitable one for all present.

The next meeting will be held September 24 at the Maple Hills Golf Club and the program for this session is being prepared by Edgar Bros. Co., who will also donate the golf prizes for the tournament finals to be played at that time.

K. V. P. Develops New Products

The Kalamazoo Vegetable Parchment Co., Kalamazoo, has been doing some splendid research work recently which has resulted in a number of new products. This company manufactures parchment, bond and ledger papers, and all kinds of paper specialties, and is constantly striving to develop new uses for paper.

One of the most recent discoveries is a by-product called liquid mulch. The waste water from the mill is put through a number of settling tanks to take off as much water as possible. The residue is packed in barrels and sold to the farmers to be used as a mulch. This liquid is poured around plants and as the moisture goes into the earth and is absorbed in the air, the fiber forms a coating around the roots of the plant.

A process has also been perfected that will produce an extremely tough and strong paper called whale hide. This paper has been twisted into strands and woven to resemble cane fibre in the manufacture of baskets, and furniture. It is also woven into rugs. As it is greaseproof and waterproof it can be easily cleaned, and samples are being shown of books bound with this paper. The covers are attractive and will give long life under heavy wear.

This company's Miracle Paper, a rag paper impregnated with polish for cleaning and polishing furniture, woodwork, floors, metal surfaces, etc., has given the housewife a clean and far superior substitute for the old dust cloth. The paper comes in a roll from which a sufficient section can be torn and discarded after use. It dusts, cleans and polishes in one operation.

Bryant Paper Co. Installs New Paper Machine

The Bryant Paper Co., Kalamazoo, recently installed and placed in operation a 136" J. H. Horne rebuilt fourdrinier paper machine, designed to operate from 200 to 600 ft. per minute. This machine includes a Beloit couch, three main presses, two independent dryer sections, two calender stacks and a uniform speed reel.

The paper machine was placed in operation in record time, commercial paper being made a few hours after stock was first placed on the wire. Since the installation the equipment has been performing with a high degree of success.

The paper machine is equipped with the most modern type sectional electric drive, supplied by the Westinghouse Electric and Manufacturing Co. The sectional drive is equipped with the latest type of Westinghouse carbon pile voltage and section speed regulators. It is also provided with the Westinghouse system of starting generator control.

Roy Breyfogle, formerly connected with the Standard Paper Co., Kalamazoo, and for the last eight years superintendent of mill No. 2 of the Eddy Paper Corp., White Pigeon, has resigned that position to accept the position of general superintendent of the Alton Board and Paper Co., Alton, Ill.

Paper Technologists Entertained by Whittingtons

On the occasion of the first annual ladies night, the Paper Technologists Club, their wives and sweethearts were entertained on the evening of August 13, by Mr. and Mrs. Frank Whittington, at their summer home on West Lake.

The guests were entertained with all manner of games, cards, etc., and served with delicious refreshments. The host and hostess spared no pains to make the evening an enjoyable one, and those present acclaimed it a most delightful occasion.

The next meeting of the club will be held at the Columbia Hotel, Kalamazoo, September 10, at which time officers will be elected and installed. The members of the nominating committee are: Carl Schneider, Vivian Heinmuller and Frank Libby.

Paper Merchants Visit Munising

Paper merchants from many parts of the country gathered far up on the Northern peninsula of Michigan at the little town of Munising on Lake Superior to attend the first annual meeting of Caslon Bond distributors held at the Munising Paper Co. Mill on August 14.

Plans and programs for the future progress of Caslon Bond were discussed by George M. Seaman, executive director of the Munising Co., C. H. Worcester, president, and W. A. Munro, production manager. A trip through the mill and an inspection of the new power plant and other improvements followed, after which the advertising plans for the next year were discussed.

On the following day the meeting moved to Blaney summer resort, where a short business session was held. The scene then shifted to the golf links and to the airplane field, where a Ryan monoplane was chartered for the use of the party.

◆ NEW ENGLAND ◆

Mills Get Ready for Better Business

While the business depression in this section continues, although noticeably in some respects better than in other parts of the country, the paper industry continues to use idle time of many of its employees to install new plants, renovate and improve existing plants and equipment, and even to engage more thoroughly in research. They have a good organization on which to pattern this activity for it is reported, and New England plants bear it out, that the Steel Corporation is using the present period of inactivity to plan for a greater future.

Just one instance to note is that of Hollingsworth & Whitney Co., who has just completed the installation of two new Edgmore boilers equipped with Taylor stokers manufactured by the American Engineering Co. The new boilers are in the Taconnet mill at Winslow, Me. The new equipment replaced stokers, of an older and less efficient type. The new ones are of the typical Taylor underfeed type, and are located in a building of fairly recent construction with plenty of room for expansion as the need may arise. The boilers themselves will develop 11.20 hp., and will be operated at 450 pounds steam pressure. A Westinghouse 3,750 turbine has been installed.

Shortess Mills to Pay Dividend

Good news comes to hand concerning the Shortess mills, including one of the properties controlled by Mr. Shortess, in New England, the Inland Paper Board Co., at Versailles, Conn. Creditors of that plant, which with the other board mills in the Shortess group, have been operating profitably in 1930, may pay to creditors another 10 per cent dividend this month or next.

The company, has been operating in black ink, has met all obligations entailed since suspension of payment on all claims, and has already paid off 10 per cent of those old

ASK THE G·T·M· TO

LOSSES IN **YOUR** OPERATION

The discovery of waste is a prime function of the G.T.M. —Goodyear Technical Man. Now in the handling of materials, now in process methods, he searches out leaks and stops them. He corrects unsuspected losses. Whether your problem is the movement of goods, engine-power, air, or liquids, his knowledge is at your service. By accurate specification of Mechanical Rubber Goods to need, he has lowered costs in innumerable operations. From raw stuff to finished goods he knows industry. He stops costly waste.

Throughout the paper industry are G.T.M.-specified economies. He is an expert in the field. He has applied Goodyear Compass Endless (Cord) and Goodyear Emerald Cord Multiple V Belting to beater drives with outstanding and uniform success. He has installed Goodyear Conveyor Belting for movement of wood chips and stoker coal. He has furnished Goodyear Sanitary Hose—a *soft-nozzled* hose—for wash-up, and pounds of Goodyear Packing to conserve your power. The G.T.M. can bring new profit to you now.

• • •

For data on savings the G.T.M. can bring to your operation, just write to Goodyear, Akron, Ohio, or Los Angeles, California.

THE GREATEST NAME IN RUBBER

GOODYEAR

BELTS MOLDED GOODS HOSE PACKING

claims, a pretty satisfactory record for a year such as this has been. It is understood that the Midvale plants have paid off some 20 per cent of debts to their creditors on the old accounts and that the Federal Paper Board Co. has done upwards of 50 per cent.

The reason that large payments were not made in the case of the Connecticut company it is understood was due to the fact that payment on a bond issue came at the time and required considerable cash. All three companies, particularly the New England division, have been considered money makers in ordinary times being well staffed, economically operated and with good markets.

Tariff News

A freight rate docketed with the New England Freight Association by the Boston & Maine R. R. that carries more than ordinary interest is the one relating to wood pulp minimum carload rate 80,000 pounds from Boston to Bromptonville and East Angus, Quebec, where mills of the Brompton Pulp & Paper Co. are located. The new rate is superseding an obsolete rate of 19c per 100 pounds to Sherbrooke. It may have no connection, but it may be pointed out at this juncture that certain New England kraft paper mills with North American sources of wood pulp have intimated that if the price of Southern kraft paper continues at unreasonably low levels, they believe they have a most effective counter weapon in the 1.75c or less Scandinavian kraft which they believe is better and cheaper than pulp made from southern pine.

Many freight rate changes in New England of late, some of them instigated by the carriers themselves but whether at the request of the shippers or not, voluntarily acceded to carry with them the laconic explanation, "Reason: Motor truck competition." The new England roads were slow in awakening to the necessity of meeting truck opposition by rates that would hold some of the business. Certainly, they have finally reasoned, it is cheaper to carry traffic at two-thirds the revenue they believe reasonable, than to move the cars deadhead. One such instance is as follows: From. Mt. Tom, Mass., home of the Mt. Tom Sulphite Pulp Co., the rate has been cut from 5c to 3½c per 100 pounds for the aforementioned reason.

American carriers are also taking action to meet rates quoted on Canadian roads. Instance: the rate on newsprint from Millinocket, Me., to Endicott, N. Y. The old rate was a combination, much higher; the new one 32c per 100 pounds meets the Canadian carriers, who as in some cases would take it much further for less money than their American competitors.

Other rate changes proposed and docketed with the New England Freight Association this month include the tariff on wood pulp from St. John, N. B. to Holyoke. The new rate will be 25½c; old was a high sixth class figure. A rate, the reason wherefor is a little obscure, docketed with the association, will cut the rate on scrap pulp board 30,000 c.l. minimum from Boston to Covington, Va.; present, 57½c; proposed, 35c. The Boston & Maine R. R. will make it clear in its future tariffs that its classification designation "Paper Bags" does not include paper shopping bags.

Massachusetts paper mills who have signified their intention of presenting exhibits in the Tercentenary Exhibit of Massachusetts manufacturing products the first week in October, include American Writing Paper Co., Esleeck Mfg. Co., Falulah Paper Co., Crane & Co., Marvellum Co., Strathmore Paper Co., Tileston & Hollingsworth Co., United States Envelope Co., and American Tissue Mills. The American Writing Paper Co., will probably present its miniature paper-making machine in operation.

It is reliably reported in the Boston market that a large eastern Canadian bleached sulphite is being freely offered at 3.12½c delivered New England mills. A New England No. 1 bleached sulphite has been cut this month from 3.50 to 3.25c mill.

Markets at New Low Points

Raw materials in New England are in some cases quoted lower than previously in a period of nine years. In particular is this true of coal. New River nut and slack, the tidewater coal used chiefly throughout New England except in the Holyoke and other Connecticut valley sections of Massachusetts, New Hampshire and Vermont, touched new lows late in August with sales at $4.60 on cars Boston, with transactions pending at $4.50. This is low volatile coal used in stokers or powdered coal burning plants. It is emphasized that the nut and slack or so-called stoker coals, are the cheapest and weakest, the most plentiful at Hampton Roads. A Fitchburg paper mill recently importuned a carrier to hustle along five cars of all rail Pennsylvania mine run coal, and this bears out the general situation in lumpy fuel; it is relatively much stronger and in decidedly lighter supply at the mills, at $1.90-$2.15 net tons mines.

The price of rope has been cut again to 3c dock or 3.5c shipping point by the largest users. Another cut has been made in old book stock to $1.20-$1.25 delivered, in keeping with the I. P. price-cut at its Fort Edward mill to $1.15 delivered.

The Massachusets Press Association on its fall outing lasting over the week end beginning September 26 will visit the mills of the Parker Young Co., at Lincoln, N. H. After a mill inspection, they will be given a trip on the company's own railroad to its latest timber cutting operation.

It is understood that the pulp mill of Brown Co., at Berlin, N. H. will be operating and in good condition before the end of this month and probably much earlier. An explosion on August 12 wrecked part of the mill and cost loss of life and injuries to a few. Sulphite fumes drove workmen away at the time and not many were present when a digester with 24 cords of wood blew up. Most fortunately other digesters nearby were not under high pressure at the time so that further explosions and loss of life were prevented. An investigation has not disclosed any negligence so far as can be learned nor any defect in the equipment. In respect to most of its pulp, the company was able to maintain deliveries.

Revised plans for the new plant of the Strathmore Paper Co., at Mittineague, Mass., have been finally approved, it is believed, and construction will soon be underway on an addition costing around $150,000, a considerable part of which will be used for printing.

Tileston & Hollingsworth Co., Boston paper manufacturers, calls the attention of its customers to the benefits accruing under the new tariff with relation to the increased duty on direct mail matter advertising foreign goods. Opportunities are pointed out for the printer to capitalize, and incidentally for the American mill to obtain contracts both for domestic and foreign direct mail advertisers using the facilities of American presses.

Nashua Velours is a new grade of paper which has been put on the market by Nashua Gummed and Coated Paper Co. There are few counterparts of this sheet to even a slight resemblance. It is made in eight colors and black, and sample books are now in the hands of distributors. It has a suede finish and as a cover of strength, beauty and to simulate leather of this character will prove a real contribution to the industry.

Ralph L. Day comes to the Boston office of the American Writing Paper Co., from a long experience with Arnold Roberts Co., Boston merchant, who is also one of the Boston service houses for the Eagle A line. He has, therefore, a considerable experience with the American lines and is familiar with that company's policies. He will be engaged

AS THE PLANE IS CONTROLLED in FLIGHT

Every movement of the plane up . . . down . . . into a loop . . . must be certainly and accurately controlled by the aviator.

And just as certain . . . just as accurate . . . is the control of every operation in the manufacture of Appleton Felts and Jackets.

This absolute control is to assure quality and uniformity of the product, designed with technical foresight and made specifically for the definite requirements of the customer—another reason for the wide acceptance of Appleton Felts and Jackets.

APPLETON WOOLEN MILLS
Appleton, Wisconsin

Appleton
Felts and Jackets

in sales service, besides maintaining mill merchant contacts and assisting merchants on specific problems with their trade. Associated with him at Boston will be Bernard McGrath, who has been with the A. W. P. Co., for several years.

Grant Charter to Paper Stock Sales Corp.

The Paper Stock Sales Corporation which has been chartered under Massachusetts laws, is one of the most interesting attempts to meet the severe problem which has been facing the waste paper trade of the East, the less than cost price of mixed papers which are consumed almost wholly by board mills. Incorporators of the Bay State organization who have capitalized it at $50,000 include Robert Graham, of P. H. Graham & Sons; W. H. Brown, of D. DeStefano Co.; Charles McKenna, of M. S. Alper & Sons of Providence; and Richard Graham, of James J. Graham Paper Co., all of them leading waste paper dealers of Boston and Providence.

The supposed aim is to market methodically and systematically some of the waste paper of these communities or of eastern New England generally, and possibly confined to one grade alone at the start. What the complete plans of the company are cannot be stated at this time for it has not at this writing started to function. Exhaustive cost analysis has proven to the satisfaction of papermakers as well as dealers in supplies, that $4-$4.50 mixed paper is decidedly unprofitable.

The Penobscot Chemical Fibre Co., Great Works, Me., is completing the installation of a Chemipulp process which it is anticipated will improve the fiber characteristics of its sulphite, produce a more uniform product and greatly increase operating efficiency through saving of chemicals and other factors. At the same time, the company announces a New Penobscot bleached sulphite pulp at an unchanged price, which it is declared is 30 per cent stronger, higher in Mullen and whiter and cleaner than their previous very satisfactory pulp. The company also is one of the largest producers of soda pulp and with Mt. Tom Sulphite Pulp Co., is the only manufacturer of pulp exclusively for the market in New England.

Arthur Holbrook, formerly secretary of English China Clay Sales Corp., has been elected vice-president and American manager of the company. Mr. Holbrook will continue, however, to maintain his personal offices at 10 High street, Boston. D. E. Milne becomes secretary and H. M. Gillespie treasurer. Changes occur as a result of the recent passing of S. Goldman, for many years American manager.

Orono Pulp & Paper Co., division of Eastern Mfg. Co., Orono, Me., is to install a Chemipulp process for improvement of uniformity of quality and higher efficiency at its unbleached sulphite mill.

It is understood that Chemical Paper Mfg. Co.'s old 60-inch cylinder machine is to be dismantled. The company meantime has completed reconstruction of its 72-inch equipment giving a trim of 76 as rebuilt and is making folding boxboard on this and the 92-inch addition installed last spring, and on which greater widths are expected.

An extension for the state pier is demanded at Portland, Me., to handle the ever-increasing wood pulp traffic through the port. Incidentally, 20 cargoes of pulpwood for International Paper Co., Eastern Manufacturing Co., and possibly one other mill are expected through that port from August to December inclusive, from Russia alone, and in addition to the substantial coastwise movement from the Provinces.

Employment in Massachusetts paper mills is down in July as compared to June according to figures of the Massachusetts Bureau of Labor and Industries. In Holyoke, 25 mills with 5,423 employees reported 985 on full time. Nevertheless, operations in the paper industry are better than those in any other major industry of the state. July employment was 85.2 per cent of normal, taking the 1925-27 year employment as an index for "normal." This, of course, included part-time employment.

Northeastern Supers Annual Meeting

The fall and annual meeting of the Northeastern Division of the American Pulp and Paper Mills Superintendents Association will be held at "The Balsams," Dixville Notch, New Hampshire, September 19 and 20, 1930.

Chairman W. A. Cape has appointed E. J. McDonnell, of Groveton, N. H., as chairman of arrangements, and he in turn has chosen the following: W. D. Sommerville, W. T. Libby, John A. Harlow, H. J. Desmond, C. W. Stewart, C. A. Brautlecht and K. E. Terry to assist him.

The program as outlined is to be golf, Friday, the 19th, at 2:00 p.m.; business meeting and election of officers at 2:00 p.m. Saturday, the 20th. Banquet and entertainment in the evening.

Professor Adams of the Massachusetts Institute of Technology is scheduled to give a paper on Control System in Paper Manufacturing, and K. A. Newman of E. F. Houghton & Co. will speak on Lubrication in Paper and Pulp Mills.

Chairman Cape and Secretary Cloudman have written to members advising that The Balsams is one of the most beautiful spots in the White Mountains, and all should endeavor to be at this meeting and make it a banner one.

The International Purchasing Co., 333 Washington street, Boston, buyers of old rope for papermakers, has acquired a storage plant at Ayer, Mass., junction of several railroad lines, and will ship rope there instead of storing it at Boston when immediate mill shipment is not desired or feasible. This may divert some shipments from New York to Boston. Storage in transit rates have been arranged so that through rates Boston to destination plus a nominal handling charge will apply.

◆ NORTHERN NEW YORK ◆

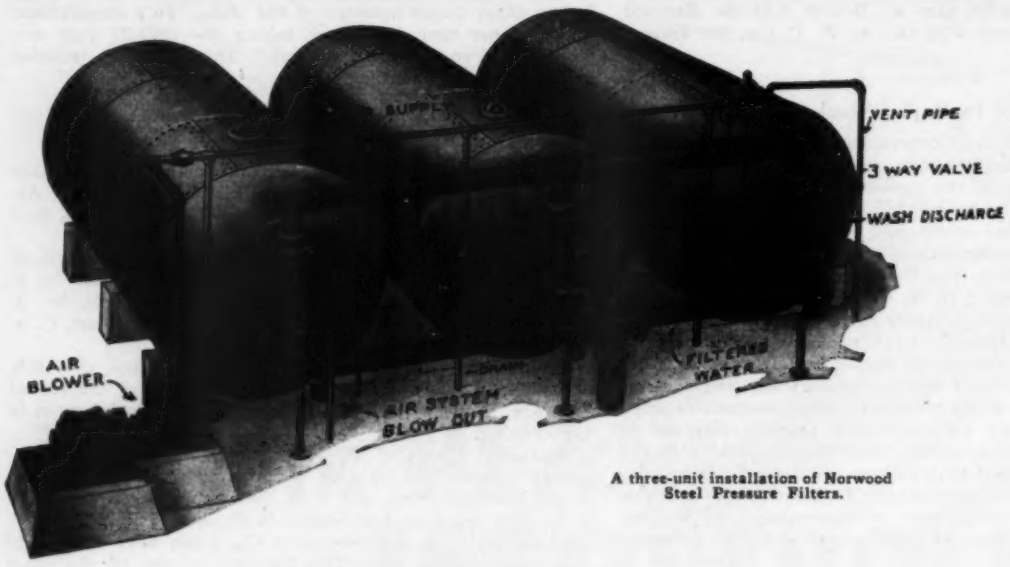
Herbert V. Clark

Herbert V. Clark, president of the Malone Paper Company, died at his home in Watertown, August 14. He also was treasurer of the Frank A. Empsall company and president of the Felt Drug company, both of this city; and for sixteen years he had served as postmaster at Dexter. He was an organizer and first vice-president of the First National bank there. Mr. Clark was born in Dexter sixty-nine years ago.

Surviving are his wife, a daughter, Mrs. A. Raymond Cornwall; a brother, Frank, all of Watertown, and a sister, Mrs. L. F. Lehr, of Malone.

Within the next few weeks several thousand tons of baled pulp will arrive at Oswego for the Taggart Oswego Paper & Bag Co. plant, via the Barge Canal. The pulp will be transported in large barges from Baltimore, brought up the Atlantic coast, the Hudson River and into the Canal. This pulp will be brought in steamers from Tacoma, Wash., to Baltimore. For sometime about 50 per cent of the pulp used at the Oswego plant has been coming from the west coast. Up to the present it has been shipped across the country by rail.

Four Russian mechanics who are employed at the Volga River Paper Co. in Russia are now at the Bagley & Sewall Co. plant in Watertown where a large paper machine is under construction for the Soviet government. The Russians are studying the building of the machine, which is the second built for the Soviets by the Watertown firm. The men do not speak English but Polish workmen at the plant have



A three-unit installation of Norwood Steel Pressure Filters.

—and down go costs!

An installation of Norwood Gravity Filters in a paper mill. One control wheel for each filter bed handles all operations.

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WATER is one of the most important of the raw materials used in paper making. With an always ample supply of clean, clear water a mill can produce paper of uniformly better quality, with fewer seconds and no threat of shutdowns during dirty water periods. Profits go up ***and costs go down!***

With a Norwood Filtration System, either pressure or gravity type, water can be taken directly from the nearest and cheapest source and filtered free from all pollution and foreign matter. If necessary, an automatic chemical feeder can be added to remove color and objectionable chemical content.

Norwood Engineering Company has been building filters for paper mills for nearly forty years. Why not let the filtration experience of Norwood's engineers help you solve your water supply problems?

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16 No. Maple Street — Florence, Mass.

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been acting as interpreters. When the machine is completed the mechanics will return to Russia to assist in its installation.

The Pyrites mill of the International Paper Co. which was closed and later reopened early in the summer has been again shut down. W. M. Baker, general superintendent, said that lack of business was the reason for the action. About 225 men were thrown out of employment.

◆ NEW YORK CITY ◆

I. P. Reports Increased Revenue

The consolidated net revenue of the International Paper and Power Company in the second quarter of this year was $10,292,995, or 11 per cent greater than in the similar quarter of last year. The balance available for dividends on the preferred and Class A common stocks of the company was $601,056, compared with $927,641 in the second quarter of 1929. In his comments to shareholders, Archibald R. Graustein, president of the company, says:

"The earnings for the second quarter reflect the present adverse business conditions which have made themselves felt through reduced sales or lower prices, or both, on substantially all pulp and paper products. Though general business conditions have not yet shown substantial improvement, it is anticipated that the earnings for the fourth quarter will show a considerable increase owing to continued reduction in costs and to larger power earnings."

The output of electric energy of the International Paper and Power Company in the second quarter of this year was 1,280,585,000 kilowatt hours, an increase of 12 per cent over the output of the same properties in the second quarter of last year, and 3 per cent over their output in the first quarter of the current year.

John F. Boyle, boxboard manufacturer of Jersey City, N. J., who died suddenly on July 2 after a long and prominent business and political career, left an estate estimated at $5,000,000, according to his will filed in the prerogative court at Trenton, N. J. Mr. Boyle divided his estate among his immediate family, except for bequests of $10,000 and an annual income of $3,500 to Miss Julia Moon, of Jersey City, his secretary, and $1,000 to Thomas McDermott, an employee for 30 years. Mr. Boyle was the owner of the Boyle boxboard mill in Jersey City, and of Boyle's Thirty Acres in Jersey City, scene of the Dempsey-Carpentier fight, and was the publisher of **The Hudson Dispatch**, a Union City (N. J.) newspaper.

Fire on August 6 badly damaged the warehouse of the Gatti Paper Stock Corporation, on Monroe street between Twelfth and Thirteenth streets, Hoboken, N. J. The plant, a corrugated iron building, 500 feet long and 100 feet deep, was stocked with waste paper, and within a few minutes after the fire started, about 300 feet of the 500-foot frontage of the building was a roaring furnace. Three freight cars on a siding at the loading platform at the west side of the plant and loaded with waste paper were also destroyed, and firemen believe the fire started in one of these cars, with the wind quickly carrying the flames into the building itself.

Frederick H. Chase, formerly president of Chase & Norton, Inc., of New York, and for the last eight years with Daniel M. Hicks, Inc., importers of and dealers in paper mill supplies of 200 Fifth avenue, New York, has severed his connection with that company. Mr. Chase, who is widely and favorably known among paper manufacturers, will either make a new connection or go into business for himself again.

Richard T. Stevens, president of the Japan Paper Company, of New York City, has returned from an extensive tour through England, France, Italy, Germany, Austria and Switzerland. Mr. Stevens visited many of the European mills which are sources of supply of the Japan Paper Company papers, and arranged for the importation of new papers from famous Old World mills.

The Paper House of New Jersey, Inc., of Newark, N. J., was awarded articles of incorporation under New Jersey laws on July 24 to deal in and merchandise paper with a capital of $25,000. Herman Rice, of Irvington, N. J., is representative of the new corporation.

The plant of Harry & Ben L. Gerofsky, Inc., graders of new cotton cuttings for paper manufacturers at 15 Greene street, New York, was seriously damaged by fire on July 25, the loss being fully covered by insurance.

Alfred S. Guggenheimer

Alfred S. Guggenheimer, president of the United Manufacturing Company and vice-president of the Fiberloid Corporation, paper manufacturers and converters with offices at 200 Madison avenue, New York, and mills in Springfield, Mass., died of heart disease on July 28 at his home, 25 East Seventy-seventh street, New York, in his sixty-third year.

Mr. Guggenheimer, who was prominent in Jewish philanthropic circles, was born in Rochester, N. Y. He was an officer of several charity organizations, and for many years had supported many philanthropic enterprises. He is survived by a widow, a daughter, a son and two brothers.

Edward W. Remington

Edward W. Remington, former paper manufacturer of Watertown, N. Y., died on August 23 in the Bronx Sanitarium, New York, after a long illness. Mr. Remington had been associated with the Watertown Paper and Pulp Company for some years, later moving to Philadelphia, where he also engaged in the paper business.

A fire which started on the second floor of the paper storage warehouse of the Hearst Publications, Inc., at 419-425 Water street, New York, on August 21 burned or damaged newsprint paper valued at about $100,000. The fire was a spectacular one, and kept a host of firemen busy for several hours.

The Hudson Bag Company, of New York City, has been incorporated under Delaware laws with a capital of 1,000 shares of no par common stock to manufacture paper bags and other paper goods.

Container Corp. Takes Over Gibraltar

The Container Corporation of America, Chicago, announces that it has purchased the assets and business of the Gibraltar Corrugated Paper Co., Inc., with plants at North Bergen, N. J. The transaction was consummated through an exchange of Container preferred stock and a cash consideration.

It is stated that the Sefton plant in Brooklyn will be merged with the Gibraltar plant and that the paperboard supply of the new division will be manufactured in the Philadelphia plant of the Container Corp.

With this latest acquisition, Container is now operating nineteen plants in midwestern and eastern cities.

Gustavus J. Esselen announces the opening of new offices and laboratories where he and an experienced staff will give personal attention to problems of chemical research and technical development. Mr. Esselen's offices are located at 73 Newbury street, Boston, Mass. Telephone number, Kenmore 1859.

The Borden Company, Warren, Ohio, announces that boltdie heads for No. 3 Beaver Ratchet are now avaliable in all sizes from ⅛ to 1 inch inclusive.

.... Serving Canada's Greatest Basic Industries

Two great Canadian basic industries have outstripped all others in rate of growth during the last decade—viz., the pulp and paper and hydro-electric industries.

The important part played by Dominion Engineering Works in this growth is fully realized by the following:

One-third of Canada's newsprint is made on Dominion built newsprint machines.

56% of the hydraulic turbines installed in major hydro-electric developments during the last decade are Dominion built turbines.

DOMINION ENGINEERING Works Limited

MONTREAL CANADA

Canadian News

Speculation Regarding Price of Newsprint

That there has been very little alteration in the position of the newsprint industry recently, appears to be borne out by the report of the News Print Service Bureau giving production in Canada in the month of July. While the July output of 216,978 tons showed a slight improvement over the 213,634 tons reported for June, the ratio of operations had a fresh decline reaching a low level of 71.3 per cent, as contrasted with 73 per cent in June, 75.2 per cent in May, 75 in April, 68.4 in March, 69 in February and 71.4 in January. In July, 1929, the ratio was 84.8 per cent, while production in that month was 229,045 tons. Thus, for July, 1930, production was approximately 13,000 tons less than it was one year previously.

In the meantime, the possible action of publishers after the termination (December 31st next) of existing contracts at a price of $55.25 is being awaited with considerable interest. Contrary to expections in some quarters, officials in a position to gauge the trend of events state emphatically that they see no reason for an advance in price during 1931. The publishing business has not picked up as rapidly as was hoped for, and it is said that, with the prospects of lower revenues in mind, publishers are determined to resist to the utmost any tendency towards increased cost of paper. There are, it is pointed out, two ways in which the publishers can resist any move towards establishment by newsprint mills of higher prices for their product. They can reduce their purchases from institute companies to a minimum, and extra supplies of newsprint can be bought from sources outside Canada. Some producers and banking interests in Canada show an inclination to make light of recent moves on the part of the publishers and look upon them as empty threats, pointing to the undoubted superiority in quality of Eastern Canada newsprint. It is believed, however, by some observers, that the fact that newsprint produced in Ontario and Quebec is considered the most satisfactory in the world will not prove a deterrent to the purchase of inferior grades at distant points, provided the cause justifies this action.

That there is a desire to pool interests becomes more and more evident as time goes by, but even with a stronger spirit of co-operation between producers prevailing, the law of supply and demand must rule. In recent negotiations, the principal argument of the manufacturers was a demand for a reasonable return on the capital invested. The question of supply and demand was the comeback of the publishers: they pointed out that the industry is overexpanded, and that the consumer should not be obligated to meet the charges on any investment that is not warranted by conditions. This position appears to be strengthened by a study of the development of the Canadian newsprint industry during the past ten years and of its present position and productive capacity. When demand catches up with the present productive capacity, then only will the Canadian mills begin to reap the full benefit of the huge investments in this national industry.

Lower Freight Rates Required

Students of the freight rates problem are emphatic in declaring some relief must be given the northeast Canada paper box and carton producers in the near future that will allow them to compete with the manufacturers of the central and western provinces for the business of these territories. It is pointed out that, as the present rates structure stands, the eastern producer has little prospect of penetrating the western and central market because of the formidable transportation costs. The central manufacturers, however, can very comfortably compete with the eastern manufacturers for the business of the east. This is due to the rates being lower from the central provinces to the east than vice versa.

Some of the paper box men would be satisfied if they were given an even break on their home market, which includes the provinces of New Brunswick, Nova Scotia and Prince Edward Island, and the colony of Newfoundland. The West Indies also form a market for the eastern box men, which may be called a subsidiary to the home market, because the Maritime Provinces are the nearest part of the Dominion to the British islands to the south.

Failing in the effort now being made to equalize the rates in both directions, it is felt that the rates from east to west are due for a cut. This would allow the eastern manufacturers a better opportunity to ship west and make a profit. Under the transportation costs that have prevailed, it has been difficult to send paper boxes and cartons west at a worth-while profit.

Big Merger Expected

It is stated with some assurance by interests who claim to be in a position to know that events are quietly shaping themselves toward a merger between the Canada Power and Paper Corp. and the Abitibi Power and Paper Co. Rumors to this effect have been current for sometime, but have been regarded as nothing more than the anticipation of a possibility; now it is claimed there are good reasons for believing the merger will be achieved in the not distant future. Exactly what are the grounds for this claim cannot be ascertained, but it is said that certain obstacles which hitherto stood in the way have been removed and the ground cleared for negotiations.

If such an amalgamation should take place, it will be one of the most impressive developments in the industrial life of Canada in recent years and also one of the most impressive in the history of the paper industry. By the recent merger of the Anglo-Canadian mill at Quebec with Canada Power and Paper, the latter now controls mills with a daily capacity of 2,500 tons of newsprint. The daily capacity of the Abitibi organization is 2,200 tons of newsprint, so that the combined capacity of the two would amount to 4,700 tons.

The mills of the two companies stretch all the way from the lower St. Lawrence River to Manitoba, and along the whole route enormous areas of pulpwood are controlled. The mills operated by Canada Power and Paper are: Anglo-Canadian, at Quebec City; Belgo-Canadian, at Shawinigan Falls; St. Maurice Paper, at Cap de la Madeleine; Laurentide, at Grand 'Mère; Laurentide-Ottawa, at Pembroke, Ont.; Port Alfred, at Port Alfred; and Wayagamack at Three-Rivers. In addition to newsprint, Canada Power and Paper has capacity for the production of 125 tons of kraft paper and 240 tons of sulphate pulp daily. The mills operated by the Abitibi company are situated at: Murray Bay, Que.; Beaupré, Que.; Sturgeon Falls, Ont.; Espanola, Ont; Sault Ste. Marie, Ont.; Iroquois Falls, Ont.; Smooth Rock Falls, Ont.; Fort William, Ont.; Port Arthur, Ont.; Georgetown, Ont.; Mille Roches, Ont.; Thorold, Ont.; and Pine Falls, Man. In addition to newsprint, Abitibi has a large capacity for the production of high grade bleached sulphite pulp at Smooth Rock Falls, and for book, writing and coated papers at the four Provincial Paper mills, which it recently acquired by exchange of stocks.

A relatively new use for kraft pulp is being developed by paper mills in Canada making kraft pulp and papers, in the way of a lining paper for paper box manufacturers. This kraft liner is corrugated by box makers and used instead of the usual corrugated paper. So far as Canadian mills are concerned, they are just beginning to make use of the new paper, and box makers are experimenting with it. It has been made more extensively in the United States where it is understood to have established itself to some extent.

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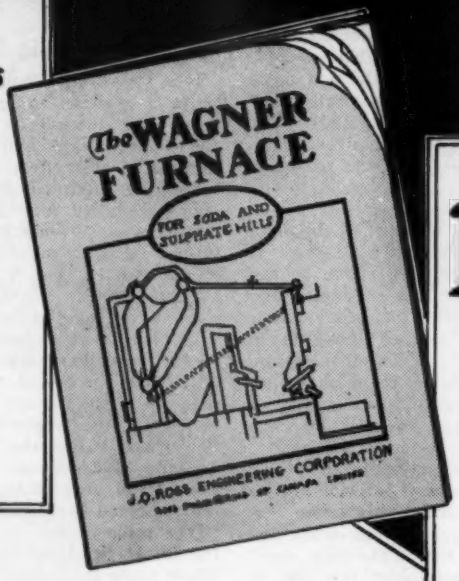

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SOLE LICENSEES

Taschereau Considers Russian Pulpwood "Only a Gesture"

Shipments of Russian pulpwood now entering the United States via the St. Lawrence River and transshipped for American paper mills are not likely to cause serious embarrassment to the Canadian newsprint industry according to a statement of the findings of the Provincial Department of Lands and Forests of Quebec, and of independent forestry experts given out last month by Premier Taschereau. "Though we have been following the situation closely," said the Premier, "no complaints have been received from any paper companies operating in the province, and the Russian pulpwood export is believed to be nothing more than a gesture on the part of the Soviet authorities.

"Our forestry authorities and those outside of the Provincial Government who have investigated the question of imports of Russian pulpwood to the United States mills are of the opinion that the sale of this wood at the market price is most uneconomic and that the volume of imports will be merely enough for trading talk.

"Figures compiled by pulpwood experts who visited the S. S. Fishpool at Sorel some three weeks ago and examined her cargo of Soviet wood awaiting shipment by canal to New York and Pennsylvania showed that the imported wood will probably be sold at a figure much lower than its actual cost. Even granting that the woods operations which are being carried out on the shores of the White Sea are being executed by convict labor, the cost would still be far above the sale price of Canadian pulpwood cut off private lands in the Province of Quebec and sold to American paper mills. While the present Russian imports plan may be purely another example of Soviet propaganda, the Office of the Union of Soviet Republics in New York City has been seeking the advice of both American and Canadian forestry and woods operation experts for the further development of Russian timber resources, and are considering the introduction of Canadian methods in northwestern Russia, and also in Siberia. Plans have been laid for preliminary exploration by aeroplane of immense areas with a view to large-scale operations. Since there are neither sufficient paper mills nor adequate hydroelectric plants to handle the vast quantity of wood which might be cut, it is not regarded that Russia might become a serious competitor of the Scandinavian countries for the European market," Premier Taschereau concluded.

Pyrites May Supplant Sulphur

Arthur A. Cole, special mining engineer of the Temiskaming and Northern Ontario Railway, recently delivered an address at Kirkland Lake, Ont., on the Freeman process of treating iron pyrites. This discovery promises to be of great importance to the paper and mining industries of Northern Ontario. The process is quite a recent development, and it is possible that it may result in eliminating most of the sulphur imports at present being brought into Canada, at least insofar as pulp and paper mills are concerned.

The Freeman process, Mr. Cole explained, has now passed the experimental stage, and can produce sulphur dioxide gas, such as used in the manufacture of sulphite acid, cheaper than it can be obtained with the sulphur burners in general use in Canadia pulp mills at the present time. The pyrites are blown into a rectangular furnace, four feet by six feet in dimensions, through the top with a swirling motion. The furnace is first heated by means of oil to a temperature of 1800 deg. Fahr. and, once ignited, the sulphur in the pyrites continues to burn, forming sulphur dioxide and evolving sufficient heat to maintain the reaction. The little pellets of iron drop to the bottom of the furnace and should any sulphur be enclosed in them, the heat causes the sulphur to burn; the resultant gas escapes and leaves a residue of magnetic iron. One of the essential features of the process is that the hot gas, which must be cooled for use in acid making, is used to generate steam at the same time that it is cooled; about 5 per cent of the steam thus generated is required to run the pyrites-burning plant, and the remainder is available for other uses in the mill.

Paper and pulp mills are keenly interested in the process

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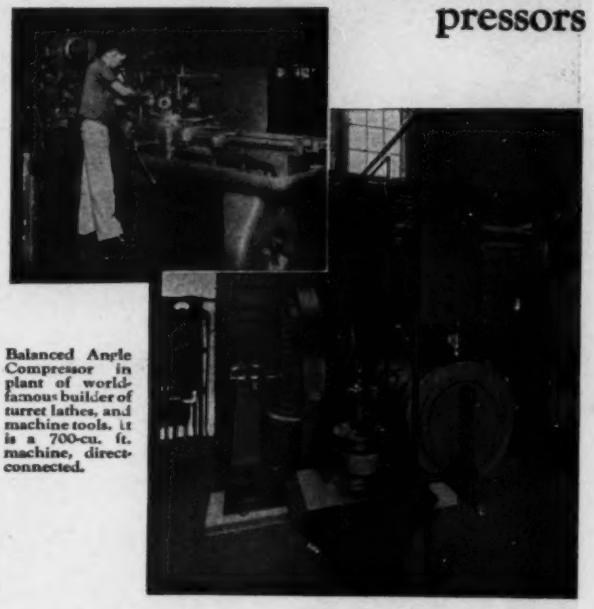

Balanced Angle Compressor in plant of world-famous builder of turret lathes, and machine tools. It is a 700-cu. ft. machine, direct-connected.

Compressed Air is reducing inventories

A few minutes clipped off a few operations, and off the waiting time between, may take a surprising slice from inventory. Shorter interval from raw material to finished product, is the call of the moment. And leaders are speeding tasks, and smoothing production lines, with compressed air.

This Balanced Angle air compressor was photographed in a 70-year-old New England plant where famous turret lathes, and many other machine tools are made on large scale.

Air hoists load and unload material, speeding handling between departments. Air jets at each machine blow out the chips and dirt. Air chucks speed lathe operations.

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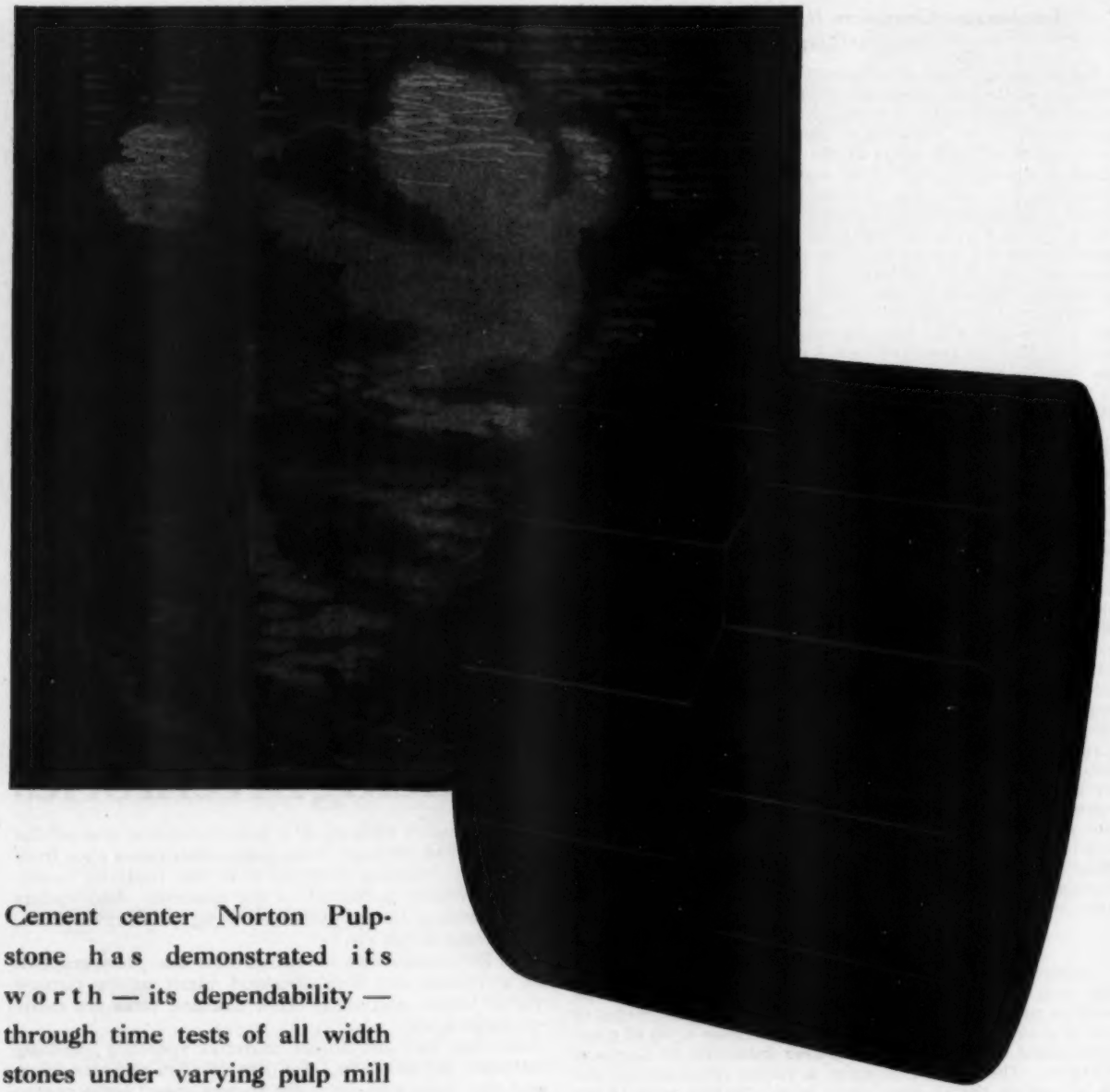

Cement center Norton Pulpstone has demonstrated its worth — its dependability — through time tests of all width stones under varying pulp mill conditions. It eliminates the necessity for returning centers when renewals are necessary.

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Canadian trade supplied from Canadian plant

Grinding Wheels
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NORTON
PULPSTONES

Refractories - Floor and Stair Tiles

and are awaiting assurance that the supply of iron pyrites is sufficient to warrant changing their present equipment. One company that formerly was burning 10 tons a day of sulphur now uses 20 tons of pyrites and has had good results for the past two months.

Falling Off in Paper Exports to Brazil

Dealing with special features of Canada's export trade with Brazil, A. S. Bleakney, Canadian trade commissioner at Rio de Janeiro, says that for the fiscal year 1929-30 shipments of newsprint were valued at only $1,536 as against $70,465 in the previous year. Total imports under the heading of wood, wood products and paper dropped from $73,117 to $5,123 due to failure of substantial repeat orders to materialize on an initial shipment of newsprint. Newsprint must be specially watermarked for the Brazilian market with faint lines 5 centimeters apart. It is difficult to understand why Canadian newsprint can compete successfully with Scandinavian in the Argentine, but not in Brazil, unless the watermarking requirement is a handicap.

Apart from newsprint, the only other significant item is building paper, of which the asphalted-felt type enjoys a limited sale for roofing purposes. A carload order of pulp fiberboard was recently placed, and this business looks promising.

Representatives Appointed for Swedish Machinery

As the result of a stay in Canada of several weeks, George Willock, assistant sales manager of Nydquist & Holm, of Trollhattan, Sweden, took an order from Abitibi Power and Paper Co. for a 2,000-horsepower hydraulic turbine, to be used for replacement at the Iroquois Falls mill, and appointed two Canadian firms agents for the sale of Nydquist & Holm engines and turbines in Canada, the Holden Co., Ltd., Montreal, for hydraulic turbines, and Swedish General Electric Co., Ltd., Toronto, for Diesel engines.

The Nydquist & Holm Co. is a large and old Swedish concern, employing 1,500 operatives. It has been making numerous pieces of equipment for the Russian Soviet Government. It makes locomotives, tractors, railway cars, motor buses, and many machinery specialties, for some of which Mr. Willock desires separate representation in Canada.

According to Emile Piens, counsel at Paris for the External Trade Department of the French Government, French manufacturers of paper and paper products would rather buy their pulp from Canada than from Sweden, even though they do not expect to save money by so doing. Mr. Piens, while in Canada last month, interviewed business leaders, especially those in the pulp and paper industry, in the hope of bringing about eventually a trade agreement with Canada which would enable France to buy her pulp here.

❖ QUEBEC ❖

Dominion Engineering Well Booked with Orders

Despite the fact of overproduction of newsprint by the Canadian mills, there continues to be increased facilities for its manufacture. For example, it is reported that the Dominion Engineering Works, Montreal, has in hand the following items of machinery for Canadian mills:

The largest newsprint machine ever made in Canada, the size of which is not specified, nor the mill where it is to be installed. A guess is made that it is part of the new equipment for the Powell River Co., which has started an expansion program to increase the productive capacity to 700 tons of newsprint daily. Six grinder motors also are to go to the same mill, it is reported, from Canadian General Electric Co. This company has also been awarded a contract for a 20,000 h.p. turbine for the St. John River Power Co.'s plant at Grand Falls, N. B.

It is stated the Dominion Engineering has an order for two new machines for the Mersey Paper Co., Liverpool,

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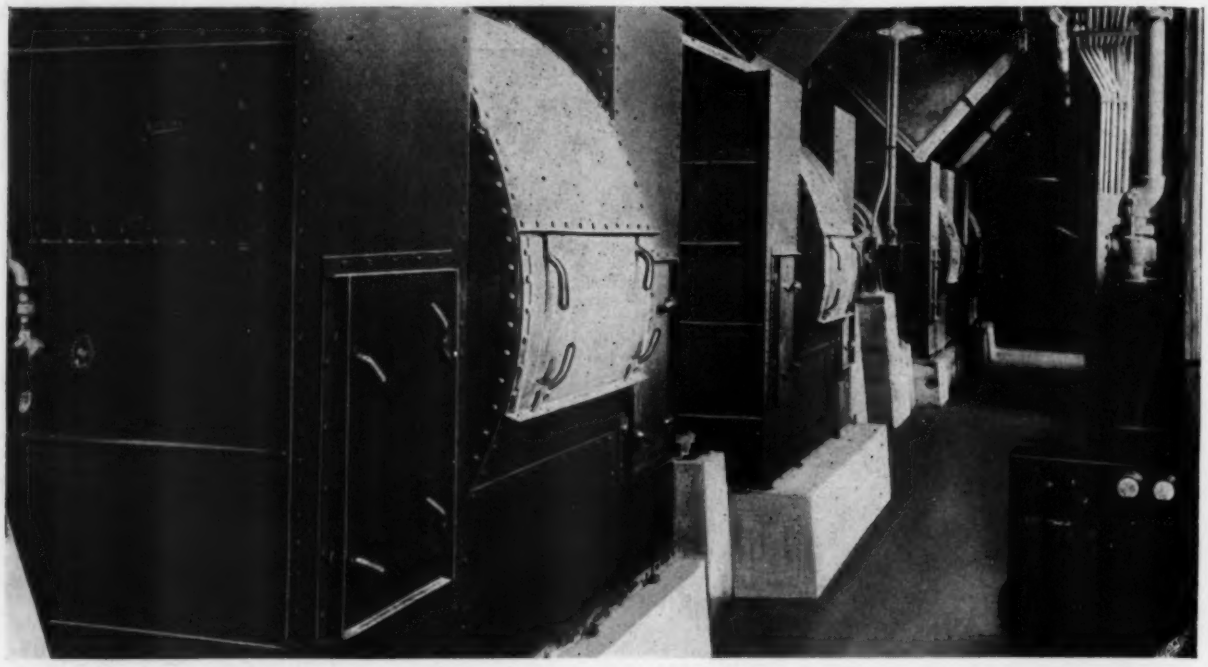

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In Canada:
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

N. S., and for a newsprint machine for the Powell River Co., in British Columbia, as well as for a number of turbines. Added to all these, there are some large orders for hydraulic machinery going through the plant, for Seven Sisters Falls, Beauharnois, and Chats Falls power developments.

Final Expropriations for Lièvre River Development

The Quebec Public Service Commission has handed down the final series of awards for the expropriation of land along the Lièvre River, required for the water storage in connection with the power development of the James McLaren Co., of Buckingham.

The award just made is the third and final one and the total of the three reaches $589,905 to be paid by the company. The land taken is situated on both sides of the Lièvre River between Mont Laurier and Buckingham, and was flooded under a plan approved by the Quebec Running Streams Commission. The hydro plant and newsprint mill, which the company has practically completed, are located not far above Buckingham, where a dam and other works have been constructed. In addition, a 90,000 h.p. hydroelectric plant is being constructed at High Falls.

Howard Smith Paper Mills, Ltd., of Montreal, recently began the manufacture of special paper for currency and expects to develop that line of product in order that Canadian paper money may be made on Canadian paper. The Company's mills have been making real bonds and ledgers of the highest grade, the bonds being used for stock certificates, bonds and legal papers, that must not only be strong and tough but lasting.

Canada Power and Paper Increases Board

Announcement was made in Montreal last month that, at a meeting of the board of directors of Canada Power and Paper Corp., the following directors were added to the board: Viscount Rothermere, John Cowley, F. J. Humphrey, Frank W. Clarke, James W. Pyke, and Hugh Mackay, K. C. The first four named represent Anglo-Canadian Pulp and Paper Mills, and the latter two Wayagamack as a result of the absorption of these two companies in recent months by Canada Power and Paper.

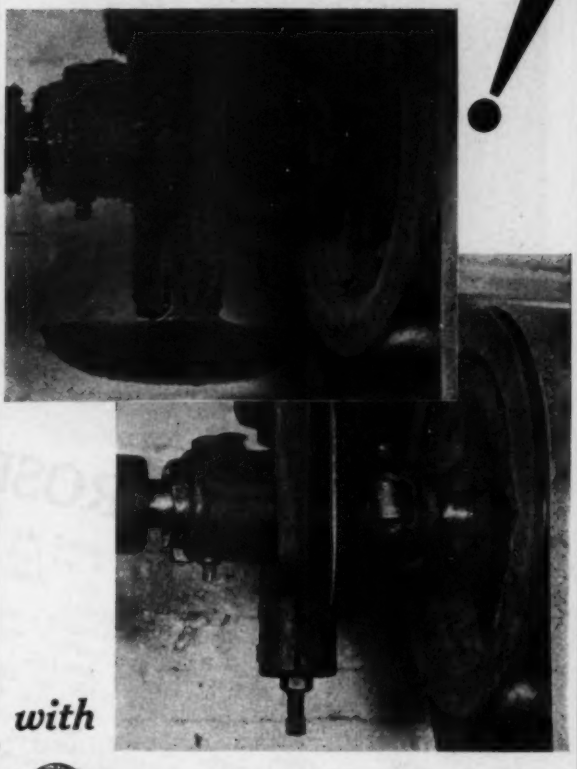
Canada Power and Paper Corp., Ottawa-Laurentide Division, recently announced that it is contemplating drastic curtailment of bush operations during the coming year. This, however, will not affect the output of the Pembroke mill next season. W. R. Beatty, manager of the company in Pembroke, stated that they are withdrawing from the Deux Rivières section entirely this season and that bush operations will be conducted on only 50 per cent of last year's scale. Mr. Beatty added, however, that the company has sufficient logs now on hand to operate the Pembroke mill through the 1931 season, and, if business conditions show improvement, there will still be ample time to secure logs for a large cut in 1932.

Scientific Forest Fire Prevention

Drastic reduction in forest fires in the Province of Quebec has been attained only by consummate organization and the application of science to fire prevention, Henri Kieffer, chief of the forest protection service, reveals in his report for 1929, recently submitted to the Hon. Honorè Mercier, Minister of Lands and Forests.

Annual statements by the Minister on the advance made in this extremely important field have become almost commonplace, in the view of a large part of the public. But Mr. Kieffer's report tells a graphic story of the lengths to which the forest protection service goes to achieve its end. Rain winds and fire winds are sorted out, minute and accurate meteorological observations are made by rangers, transmitted to federal meteorologists, and charts made daily showing humidity variations all over the province. Thus, forecasts for twenty or thirty hours ahead are possible, and Mr. Kieffer says that in 80 per cent of the cases the rangers

Eliminate DRIP



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Absorbed Oils

When lubricants drip and spatter, bearings run dry and machines wear their way prematurely to the junk pile. Flooding of bearings does not solve the problem. It is wasteful and expensive.

Absorbed Oils were developed especially to prevent oil drip and to provide maximum lubrication at minimum cost. Even under the most intense pressures they prevent metal-to-metal contact and remain in the bearings.

The use of Houghton's Absorbed Oils is your guarantee of lower lubrication costs—longer machine life—increased production—and increased profits.

FREE BOOK TELLS WHY

Write for a copy of *Houghton On Industrial Plant Lubrication* and learn why Houghton's Absorbed Oils stay put.

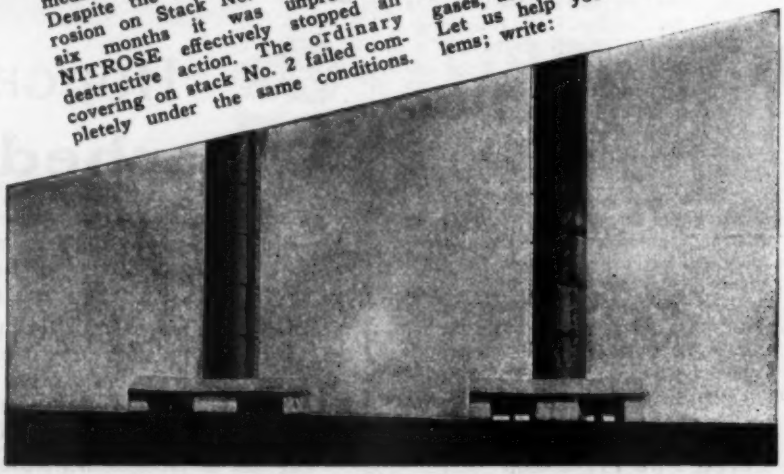
E. F. HOUGHTON & CO.

PHILADELPHIA, PA. *And All Over the World*

Here, too, NITROSE Conquers Corrosion

Stack No. 1 had been erected six months before Stack No. 2 and had been unprotected during that time. Then NITROSE was applied. Stack No. 2 was painted with a so-called "protective preparation" immediately after it was erected. Despite the inroads made by corrosion on Stack No. 1 during the six months it was unprotected, NITROSE effectively stopped all destructive action. The ordinary covering on stack No. 2 failed completely under the same conditions.

W. F. Biggs of the United Paperboard Company, Peoria, Illinois, is an enthusiastic user of NITROSE not only on the stacks pictured, but throughout the plant. NITROSE is indeed the "liquid armor that corrosion cannot eat". Needs no elaborate preparations, spreads like paint, holds like a weld. Used to protect all metal exposed to the corrosive action of extreme heat, gases, acid fumes, etc. Let us help you with your problems; write:



Photograph shows condition of stacks one year after the two coverings were applied.

The NITROSE Company

1500E Peoria Life Bldg., Peoria, Ill.

NITROSE

know whether or not they are facing a particularly dangerous period. But the service goes further: entry to the forests is controlled, slash burning is supervised, railroad locomotives are examined, even radio is being investigated as the work of protecting the people's natural wealth goes on.

The result of the work, already announced in the course of the last session of the legislature, was 426 forest fires, of which, however, only 21 attacked areas above 100 acres. Only 2 were really of large calibre. In all, 10,494 acres were burned, and it was found that 6,026 acres suffered from fires that smouldered after recent or older burnings.

Transfer Production to Canadian Mill

International Paper Co. has shut down the mill of the Waterway Paper Products Co., which it acquired recently, and has transferred the newsprint tonnage to the mills of Canadian International Paper Co. at Gatineau and Three-Rivers. The Waterway Paper Co.'s plant is located in Chicago on the drainage canal, and has an annual capacity of over 30,000 tons of newsprint and specialties. The mill is equipped with two 132-inch machines and one 204-inch machine.

The closing of the Waterway mill and the transfer of its tonnage marks the seventh instance since the first of the year of the transfer of newsprint tonnage from an American mill of the International to one of its Canadian mills. This has enabled the company substantially to increase its production of newsprint in Canada and to run at capacity its low-cost mills in the Province of Quebec. The transfer of newsprint tonnage in the past few years from International's American mills to its Canadian establishments has been reflected in the gradually increasing production of its Gatineau and Three-Rivers mills. For example, the production at Gatineau averaged 472 tons a day in 1928, the first full year of operation of the mill; this was increased in 1929, to 593 tons, and in April of this year to 644 tons. The average daily output of the Three-Rivers mill in 1927, the first full year of its operation as an eight-machine mill, was 653 tons per day; in 1928, production was increased to 667 tons, in 1929, to 692 tons, and in April of this year to 712 tons.

Despite the widespread drought throughout many sections, the hydroelectric developments of International Paper and Power Co. and its subsidiary, International Hydro-Electric System, have very satisfactory water supplies in sight. On the Gatineau River, where are located the three largest plants of the company, with a total installed capacity of 436,000 horsepower, water conditions are unusually good. The present flow of the river is more than sufficient to run the company's plant at full capacity without the use of any stored water. The Mercier storage reservoir, above the three plants, with a capacity of 100,000,000,000 cubic feet, is practically full, and with the additional storage now provided by the new Cabonga reservoir, insures an adequate supply of water to carry not only the company's present load, but also to meet the large increases in contract deliveries of primary power scheduled for this fall.

Changes in Price Bros. Personnel

An important redistribution of the personnel of Price Bros. & Co. was made recently, and as a result Major Edward Flynn has been transferred from the position of Manager of the Kenogami and Jonquières mills to the head office in Quebec City, where he will act as assistant to the president and secretary of the executive committee. The news of the impending departure of Major Flynn was received in the Saguenay Valley with many expressions of regret, for during his many years of residence there he has become universally known and respected by both the English- and French-speaking peoples.

Mr. Flynn entered the service of Price Bros. in 1900, and worked in various capacities at the saw mills on the south shore of the St. Lawrence till 1907. Since then he has been successively secretary of the company's first pulp mill at Jonquières, office manager of the Kenogami mill, local comptroller of operations in the Lake St. John District (involving the general financial control of the Kenogami and

Nash Hytor Vacuum Pumps are supplied in capacities up to and exceeding 5000 cu. ft. of air per min., at 20 inch vacuum.

For long, trouble-free service

The Nash Hytor has no valves, reciprocating pistons or other complicated parts. A rotor which revolves without contact in the casing is the only working element.

The Hytor is made throughout to assure maximum durability. The shaft is protected by renewable brass sleeves which take the wear of the packing. Oversize ball bearings support it at each end. Rigid brackets hold the bearings in perfect alignment.

Write for complete information.

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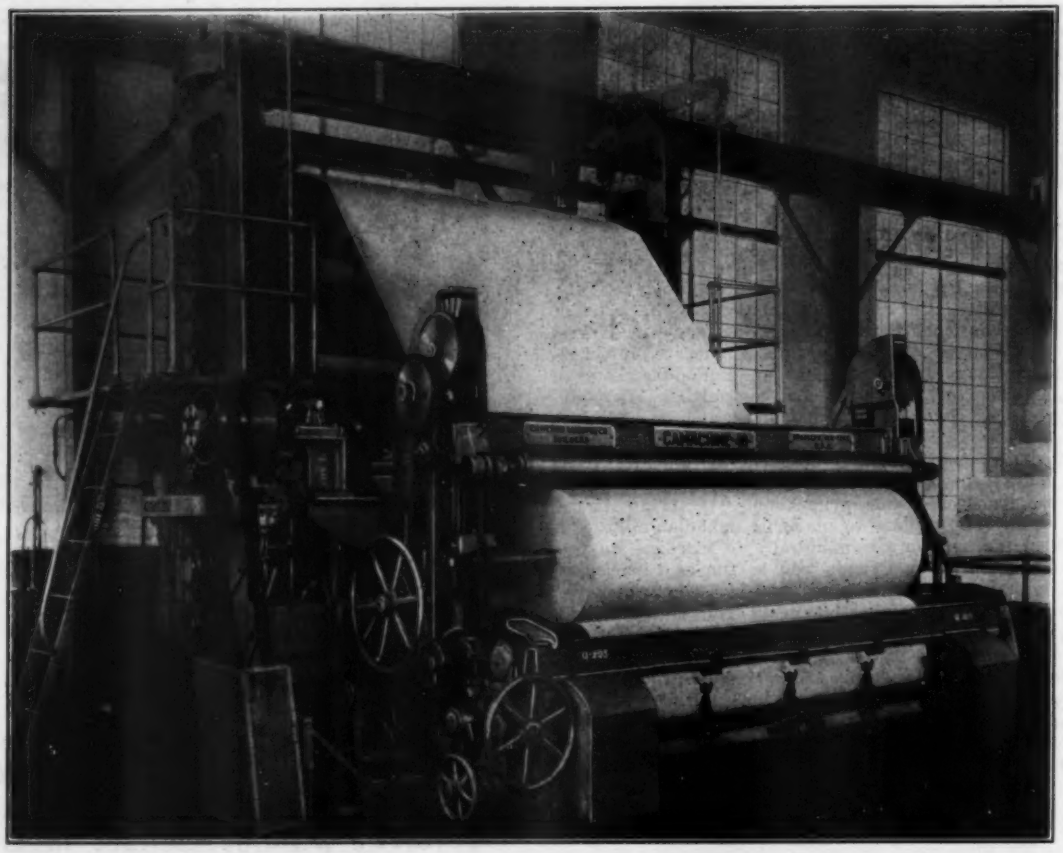
VACUUM PUMPS & COMPRESSORS



IMPROVED CALENDER WINDER

THE new Super Calender Winder, Camachine 48 Model 9, has been built with one important object in view and that is the production of practically faultless rolls of super calendered paper. This machine provides for the feeding of the web to the calender, rewinding it into rolls, passing the web through two or more times if desired and finally trimming the edges and slitting the web into shipping rolls of any size called for.

No loss of production; Cameron Winders installed at weekend

CAMERON MACHINE COMPANY

61 Poplar St. **Brooklyn, N. Y.**

Jonquières mills, Kenogami Land Co., the construction department and the logging and forestry divisions), and finally manager of the Jonquières and Kenogami mills.

On leaving Kenogami, the staff presented him with a suitably inscribed gold watch.

William G. Brockway, lately of the American Tissue Mills, has been made manager of that company's Canadian subsidiary, the Perkins Tissue Mills, which started up its plant in Montreal a few months ago.

Starting on Large Power-Development Program

The Shawinigan Water and Power Co. proposes to spend $120,000,000 during the next ten years in furtherance of its plans to develop the St. Maurice River, it was intimated recently by high officials of the Quebec Department of Lands and Forests. Six dams will be constructed and ultimately half a million horsepower will be developed.

One of the largest of the new projects is now in progress at Rapides Blancs and Rapides des Coeurs, on a 70-mile stretch of the Upper St. Maurice, between the junction of the Manouan and St. Maurice rivers and the town of La Tuque on the Transcontinental Railway. An annual rental of $25,000 will be paid to the Quebec Streams Commission on the projects, plus an annual rental of $1 per horsepower generated.

It is expected that 100,000 hp. will be developed by July 1, 1933.

Bowden Leaves Canada Power and Paper

William McE. Bowden, of Grand 'Mère, was recently appointed assistant to the president of a bank at Glens Falls, N. Y., and is assuming his new duties this month. Mr. Bowden is a native of Glens Falls, but for the past ten years has served as Manager of Woodlands for the Laurentide Co. at Grand 'Mère, and has also been managing director of the Laurentide-Ottawa Co., and likewise manager of the parent company, Canada Power and Paper Corp.

Mr. Bowden was also elected a director of the Glens Falls Insurance Co., succeeding Arthur W. Sherman, who died a short time ago. He will also become a director of a number of other insurance companies, of which the Glens Falls company is the parent organization.

It is reported that the newly organized St. Lawrence Corp. may discontinue making newsprint at its Brompton mills and transfer that business to the St. Lawrence mills, at Three-Rivers, where there are six newsprint machines with a daily capacity of 450 tons or more.

A. D. Robertson

A. D. Robertson, woods superintendent of the Bonaventure Pulp and Paper Co., died at his home at Bridgeville on July 19. Mr. Robertson was with the company and its predecessors for the past 15 years and proved at various times most valuable owing to his knowledge and experience of local conditions and the lumbering business in general.

Prior to his connection at Chandler, Mr. Robertson was woods superintendent with the Sherbrooke Lumber Co., before which he was a partner in the Robertson McCallum Co., of Barachois. The esteem in which he was held was evident from the fact that his funeral was probably the largest ever seen on the Gaspé coast, his friends coming from a radius of 100 miles to be present.

Henry W. Cressy, manager of the St. Lawrence Paper Mills at Three-Rivers, was tendered a farewell banquet on the occasion of his departure for Montreal. Mr. Cressy has been promoted to a very responsible position in the new St. Lawrence Corp., and will in future reside in Montreal. Over 300 guests were present at the Three-Rivers Club to express their regret at losing Mr. Cressy, but all joined in wishing him the best possible luck in his new sphere of activities. W. Karls, superintendent, on behalf of his co-

Jones

A name that has won a world-wide reputation through 75 years devoted to paper-making progress

"Beaters-By-Jones"
a good investment
any day—

After all
you buy:-
PERFORMANCE

» » all our experience and resources are applied to give you "performance" on the job. « «

Scientific in design, sturdy in construction, low in operating and maintenance cost. See one operate.

PAPER-MAKING MACHINERY E. D. JONES & SONS COMPANY ESTABLISHED 1848 PITTSFIELD, MASS.

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BUILDERS OF HIGH-GRADE MACHINERY FOR PAPER MILLS

KENWOOD TANNED FELTS POSSESS THE SMOOTH SURFACE FOR SUPERIOR FINISH

Smooth — a uniformity in surface that precludes any deviation from the highest standards. Whether your product is an expensive writing, news print or pulp board, the advantage of this smoother surface is equally attractive.

In addition, the new Kenwood Tanned Felts provide factors of strength, long life and greater openness that result in marked economies — greater water removal, increased speed, lower felt cost per ton.

Kenwood pioneered the one sided board felt. This same research service developed and perfected the Kenwood Tanning processes that protect the felt from the deteriorating effects of acids.

A third fundamental improvement is found in the new method of yarn construction developed in Kenwood Felts. Increasing the openness and strength of the felt with yarn that does not increase the weight nor bulk, adds very materially to the economy and performance of the new and better felt.

F. C. HUYCK & SONS

KENWOOD MILLS, ALBANY, N. Y.

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KENWOOD
WOOL PRODUCTS

workers, presented Mr. Cressy with a cabinet of sterling flatware, as a slight token of the esteem in which he was held, and in appreciation of the splendid relations which always existed between the mill manager and his staff.

According to S. R. Armstrong, manager for G. T. Clarkson, receiver of Canadian Paperboard Co., a program of improvements is being laid out in the various departments of the mills, which is designed to better operating conditions. It is felt that the company is getting a reasonable share of the business that is available; but prices are unquestionably too low, and that is a circumstance which makes reasonably full plant operation essential. That this has been maintained is evidenced by the fact that the financial position of Canadian Paperboard, viewed as a whole, shows a substantial improvement today, as compared with that of three months ago.

ONTARIO

Abitibi's Power Plans Approved

Plans of the Ontario Power Service Corp. for construction of a dam and an immense hydroelectric power development in Northern Ontario, providing employment for 1,000 men, have been approved on recommendation of Hon. H. A. Stewart, Minister of Public Works for Ontario. Abitibi Canyon, the site for the development, is situated on the Abitibi River, 65 miles north of Cochrane. The project includes the development of 270,000 hp. at the Canyon, and transmission of the power to the Sudbury district is in the hands of the Ontario Hydro-Electric Power Commission.

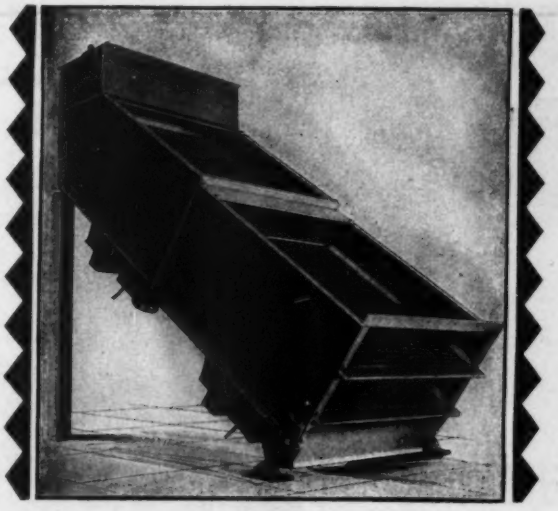
The site is naturally adapted for power development, the total drainage area of the Abitibi River at Abitibi Canyon embracing an area of over 8,400 square miles. The watershed is well wooded and affords favorable run-off conditions, facilitating regulation of the stream flow. The storage waters on the system, including Lake Abitibi, provide a storage basin with an area of over 420 square miles. Power will be developed under a net head of 237 feet.

Concrete will be used in construction of the dam, which will be erected on a solid rock foundation. The powerhouse will be located in the gorge directly below the dam and will contain five generating units of not less than 55,000 hp. each. The plant will be well balanced between available water supply, turbine and generator capacities and transmission and distribution systems. Estimated cost of construction is unusually low and total amount of bonds issued to finance the project amounts to less than $73 per installed horsepower.

Ontario Power Service Corp. has entered into 40-year contracts under which all of its output of electrical energy from the proposed development will be sold to the Hydro-Electric Power Commission of Ontario and to the Abitibi Power and Paper Co., respectively, except that the government of Ontario may direct that a small amount of power (not over 10,000 hp.) shall be sold and delivered to other customers. Under the Hydro-Electric Power Commission contract that body will purchase 85,000 hp. upon completion of the plant not later than October, 1932, this amount to be gradually increased until a total of 100,000 hp. is purchased in 1936, and annually thereafter. This contract expires in 1971, with the Power Commission holding the right of renewal.

Work on the project will be carried on throughout the winter months, and as an immediate start is indicated, this development will go far towards aiding the unemployment situation in Northern Ontario, and also means a very large expenditure in equipment, material and supplies.

According to Robert C. Douglas, manager of the Norton Co. of Canada, Ltd., building permits have been issued and ground has been broken for an addition to the present plant. This addition is necessary due to the success in production and sale of the Norton pulpstones. The Norton Co. at Chippewa previously handled part of the work on these pulpstones, but it has been found advisable to concentrate



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CHIP SCREEN

Thorough removal of sawdust and fine particles!
Small floor space required!
Low power consumption!
Immense capacity!
Fully adjustable screening angle and vibration!
No lubrication!
No destructive shaking of supports or buildings!
No belts or pulleys!
Trouble-free operation!

These are the features which make the Wood Chip Hum-mer a profitable investment for pulp and paper mills!

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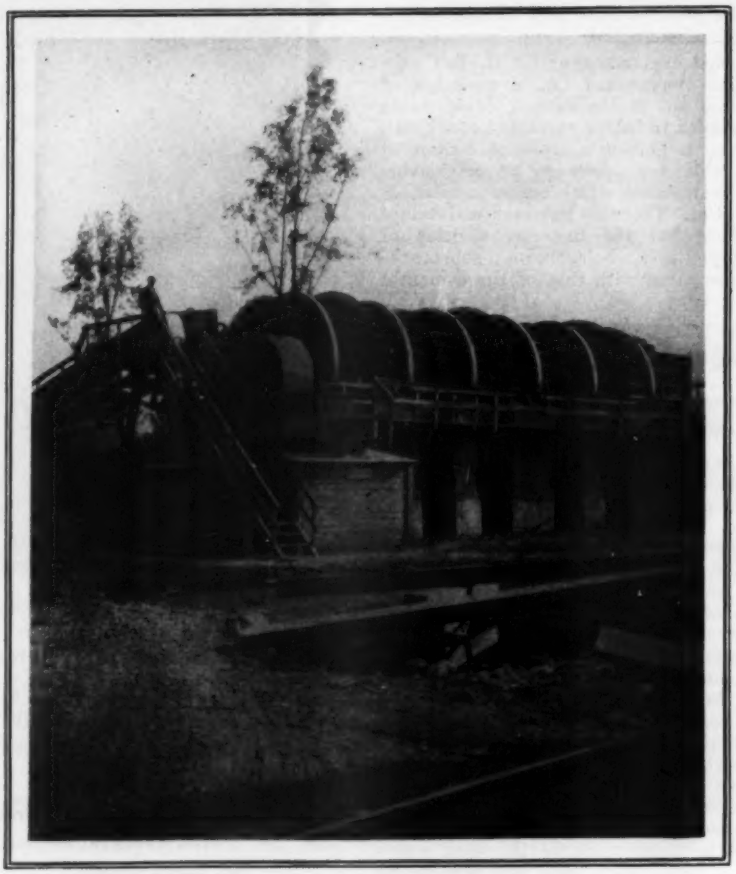

Paulson Barking Drum

This Company has been actuated by one undeviating incentive in designing and building Paper Mill Equipment: To design and build as finely as can be done; to spare no time—no care; to eliminate the element of chance from even the smallest part; to know that Manitowoc Paper Mill Equipment is as nearly perfect as is humanly possible.

Write for full information.

Designers and builders of —

Barking Drums	Incinerators
Sulphite Digesters	Disc Evaporators
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Rotary Lime Kilns	Rod Mills

Moore Crawler Speedcranes, Shovels, Draglines and Trenchoes

MANITOWOC ENGINEERING WORKS

Manitowoc, Wisconsin

both the manufacture of the segments and the assembly as well as the plant at Hamilton, from which office the product is sold. The activities of the Norton Co. along the border will now be consolidated at Chippewa.

J. Fred Booth

J. Fred Booth, vice-president and general manager of J. R. Booth, Ltd., lumber merchants and pulp and paper manufacturers, died last month in Rochester, Minn. The millionaire lumberman, who was 67 years of age, was the second son of the late J. R. Booth, pioneer Canadian lumberman, and was the father of Princess Erik of Denmark.

Mr. Booth's passing brought to a close an outstanding career in the Canadian lumbering industry. He had been ill a few weeks. Members of his family were with him at his death. His wife, Mrs. Frances Booth, C. Jackson Booth, a brother, Frederick and J. Rudolphus, sons, and Princess Erik survive him.

Mr. Booth spent 40 years in the Booth firm, learning the business from the ground up. His special interest was the operation of the firm's paper and lumber mills. His brother, Jackson, was president of the firm.

A. E. H. Fair General Superintendent of Alliance Paper

A. E. Harold Fair has been appointed general superintendent of the Alliance Paper Mills, Ltd., Merritton, and has entered upon his new duties, succeeding C. N. Candee who left to take up a position with the Howard Smith Paper Mills.

Mr. Fair is one of the youngest executives in the industry, being only 31 years of age. Since he graduated in 1922 from the University of Toronto, specializing in chemical engineering, he has been associated with the paper industry. He became connected with the Lincoln Pulp and Paper Co. and a short time later was appointed superintendent of the Lybster mill of that group at Merritton. In 1926 he went to Cambridge, Mass., to assume charge of the paper mills department of Arthur D. Little, Inc., research engineers. He returned to his Lybster mill post under reorganization in 1928.

Keyes Products to Be Made in Canada

George J. Manson, treasurer of Mansons, Ltd., Hawkesbury, has purchased from the Keyes Fiber Co., Waterville, Me., the British Empire rights, trade-marks and good will of its line of pressed pulp goods, and will locate a factory in Canada, the exact location not yet having been decided upon. Mr. Manson has been interested in the line of goods made by the Keyes company, and has taken out several patents which have been utilized in the Keyes products.

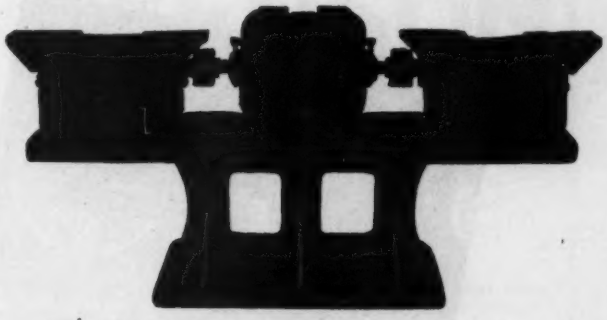
The Keyes company is the largest manufacturer of pressed pulp articles, such as pie plates, food trays, and the "Savaday" line of household articles. Its products have been extensively used in Canada and have been imported from Maine. The business of the company has increased at the rate of about 25 per cent annually of late, until it seemed to be a business necessity to establish it in Canada, and there have been various rumors that a branch would be organized to operate in Canada; but instead the above-mentioned deal has been made with Mr. Manson, whose business in Canada will be entirely independent of the Maine company.

Canadian Chemist Returns to Canada

After several years in the United States, John Buss is again making his home in Canada. He is now engaged in the executive offices of Provincial Paper, Ltd., Toronto. Mr. Buss is a B.Sc. of Queen's University, Kingston, and received his M.S. at the Massachusetts Institute of Technology.

After graduation, he was for a time a shift chemist at the Wayagamack paper mills, Three-Rivers. He then became chemist at the Ha Ha Bay sulphite mill and was there for three years. Leaving Port Alfred, he was employed for

Straight Head Concave Head



Motor Driven Model shown. Also made in Belted Types.

MURRAY WOOD CLEANER

Used for

Barking Slabs, Edgings and Sawmill Refuse of any kind to make wood chips.

Also used very successfully on *round pulpwood* to remove ingrown and stubborn spots of bark from pieces that do not bark clean in the drum due to curvature, protruding knots, etc.

SOLVES CAPACITY PROBLEMS.—Place one of these machines at the drum discharge and instead of returning wood with slight defects, clean them on this machine and make room for another piece of rough wood in the drum. You gain two pieces in this way.

PRACTICAL.—We have many in satisfactory operation. Operators say they are a great help. They can help you as well. Let us show you how.

Also furnished in Duplex Combination unit of Barker on one end and Knot Saw on the other, for removing entire knot.

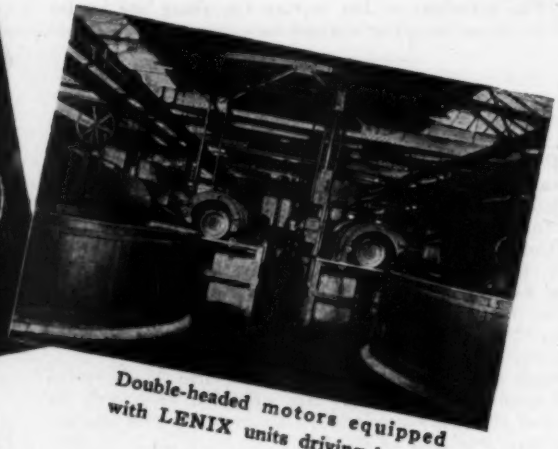
SEND US YOUR INQUIRIES.

Everything for the Wood Room

D. J. MURRAY MANUFACTURING COMPANY

WAUSAU, WISCONSIN

Nash pump driven by 100 h.p. motor equipped with the LENIX



Double-headed motors equipped with LENIX units driving beaters

Over a Period of Years....

The LENIX Will Cost You Less Than Any Other Type of Short Center Drive

Operating costs, maintenance, depreciation . . . these, rather than initial costs, are the influencing power transmitting factors. These are the ones that must be low if your production costs are not to be excessive.

Over a period of years—say ten years—you will find that the LENIX Drive would be the least costly. Based on past experience, your original belt would still be going strong. At the worst, you might just about be replacing it for the first time.

Long belt life, plus the consistently high efficiency, plus the easy load on the bearings . . . all work toward an inexpensive power transmitting medium. There is plenty of evidence to support the claim that it is the least expensive.

If you want "long run" low cost, you need the LENIX for your short center drives. There's no question about it.

F. L. SMIDTH & COMPANY

The Lenix Drive People

Engineers *Incorporated 1895*

225 Broadway, New York, N. Y.

The LENIX Drive

REG. U. S. TRADE MARK

two and a half years in the laboratory of the Bogalusa Paper Co. He subsequently was appointed assistant director of the School of Chemical Engineering Practice, Massachusetts Institute of Technology. Later, after sometime with the Arthur D. Little Company, he became resident manager of the Kaydeross Paper Co., Rock City Falls. For two years before coming to Toronto, he was assistant to the vice-president, Nashua Gummed and Coated Paper Co.

A provincial charter was recently granted Bonalite, Ltd., of St. Thomas, to carry on business as manufacturers and dealers in all kinds of paper, paperboard, pulpwood, wood pulp, etc., with an authorized capital stock of 100,000 shares without par value. Among the provisional directors are L. R. McDonald and Alfred Stevenson.

Award $23,000,000 Contract

J. H. Black, vice-president of the Ontario Power Service Corp., the Abitibi Power and Paper subsidiary which will carry out the power development at Abitibi Canyon, announced last month that the $23,000,000 contract for the construction of the dam and power house in connection with the project had been signed. The Dominion Construction Co. was awarded the contract, which will require from 18 months to two years to fulfill.

In order to finance the work, a strong international syndicate made an offering of $20,000,000 bonds of the company. They are 5.5 per cent, first closed mortgage, sinking fund bonds, and were brought out at 94.22 to yield 6 per cent. The offering was made simultaneously in Canada, the United States, England and France, and all reports regarding distribution of the bonds have been very favorable.

The Golf Club at St. Catharines was the scene of a happy little event when C. N. Candee, the retiring superintendent of the Merritton mill of Alliance Paper Mills, Ltd., was tendered a complimentary dinner by the executive staff and other officers of that organization. Geo. W. Pauline, managing director, was in the chair, and was supported by G. E. Fleck, assistant managing director, and G. C. Winlow, sales manager. In the course of the evening Mr. Candee was made the recipient of some handsome pieces of dining room glassware.

A raft of peeled pulpwood, 3,800 cords, the most valued raft of wood ever towed on northern Canadian waters and valued at $45,000, was brought into port Arthur recently, in tow of the tug A. B. Conmee. It will be stored in booms at Port Arthur until loaded for transportation to the United States.

J. H. Black, former vice-president and general manager of the Spruce Falls Power and Paper Co., was waited upon by the staff of the head office in Toronto last month and presented with a handsome travelling bag. Mr. Black recently resigned his position with the Spruce Falls Co. to accept the position of assistant to the president of Abitibi Power and Paper Co., with special jurisdiction over the company's power developments. The presentation was made by George Barber, who recently succeeded to the office of treasurer and who has been made a director.

◆ NEW BRUNSWICK ◆

Seems Leaves Fraser for International

E. Frank Seems, who has been connected with the Fraser Companies' mill at Madawaska, Me., for the past two years, has accepted a position with the New Brunswick International Paper Co., at Dalhousie, where he took up his new duties on August 1.

Mr. Seems at one time was assistant purchasing agent for the Tide-Water Paper Mills Co., Brooklyn, N. Y., until the dismantling of that plant, after which he accepted a posi-

RYERSON

IMMEDIATE STEEL FOR MAINTENANCE AND REPAIR

When something breaks . . . and steel is needed in a hurry . . . you can depend upon Ryerson for quick action. Complete stocks of all steel products, including:

Bars	Wire	Babbitt Metal
Shapes	Chain	Tool Steel
Structurals	Turnbuckles	Bar Iron
Rails	Shafting	Refined Iron
Plates	Boiler Tubes	Floor Plates
Sheets	Boiler Fittings	Safety Treads
Rivets	Corrugated Sheets	Small Tools
Bolts	Concrete Reinforcing	Machinery
Nails	Welding Rods	

Write for the Journal and Stock List — the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee St. Louis Cincinnati Detroit
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STEEL

Let Bands of Steel Protect your Shipments

Save 20% — Reduce Damage — Eliminate Pilferage — Increase Customer Satisfaction

Test after test—in laboratory and in transit—has proven the safety and economy of Signode Tensional Steel Strapping for almost every type of shipment.

The strong waxed bands of steel are quickly tightened and locked with modern semi-automatic Signode tools. The special paraffined surface of the band reduces friction at the corners and insures greater and more uniform tension.

Safe in the grip of steel, your Products will arrive in perfect condition—damage claims and pilferage losses will be greatly reduced and your customers will be completely satisfied.

—And the best feature of it all is that at the same time you can usually cut the weight and cost of your container and save freight. Average savings in recent installations have varied from 5 to 60%.

It will definitely pay you to check up and see what can be accomplished in your own plant.

We will be pleased to send a Signode Shipper who will report to you without the slightest obligation—or send complete information by mail.

SIGNODE STEEL STRAPPING CO.
2608 N. Western Ave. Chicago, Ill., U.S.A.

Offices in Principal Cities

CANADIAN STEEL STRAPPING CO., LTD.,
Montreal, Quebec

SIGNODE
The Sealed Tensional Strapping

We also furnish round wire tensional reinforcements, all forms of nailed-on strapping, automatic wire tying machines, pail clasps, clutch nails, tag fasteners, etc. Write for general catalog.

Locomotive No. 15, formerly the "Tornado," one of the first locomotives to be converted from a wood burner to a coal burner, and operated on the New York and Harlem Railroad.

Courtesy of New York Central Lines

In felts ..

as well as railroads

CLUB car, observation platform, dining car, barber shop, comfortable berths with plenty of clean, white linen, and eighteen hours between New York and Chicago . . .

Certainly a contrast with the train in which Lincoln traveled to Washington. No Pullmans. No dining cars. None of the comforts which every one enjoys today.

But the difference in railroad transportation of today and 75 years ago is no greater than the difference between the first felt that Asa Shuler and J. W. Benninghofen turned out in 1858 and the felts their sons and grandsons are making today.

Time makes many changes. Experience stands back of all real progress.

In back of every Hamilton Felt is the experience of these 72 years. Little wonder that these felts are easy on the coal pile, that they take out water in more than usual quantities, that they wear long, that they combine those diametrically opposed qualities of strength and openness.

To try one Hamilton Felt is to use them always. The check sheets will then insist that you use nothing else. Ask the Hamilton Felt Man for a felt that will exactly suit your machine, product and mill conditions.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

SHULER & BENNINGHOFEN, Hamilton, O.

The Miami Woolen Mills

Established 1858

Hamilton Felts

tion with the Murray Bay Paper Co., a division of the Abitibi Power and Paper Co., where he organized a stores system. He went with the M. E. A. D. Co., in May 1928, who were then constructing two mills at Madawaska, Me., for the Fraser Companies, of Edmundston. He was instrumental in organizing a materials department for this company, as well as a modern system of store keeping.

Private Financing for Fraser Companies

Official announcement has just been made of private financing for the Fraser Companies. This has generally been hailed as the only possible solution of the company's immediate situation.

The present embarrassed position of the company appears to be simply the result of a large expansion program undertaken on borrowed capital coinciding with the present very depressed state of trade and industry in the United States, where lies the major market of the Fraser Companies. While an early pick-up in business in the United States might find reflection in a very ready manner in the earnings of the companies and place before it a very radically changed picture, a continuation of present conditions for any protracted period would very apparently necessitate important financial reorganization for the company.

Reports are current of the possible absorption of Fraser Companies by one of the larger organization, but definite information is lacking. Fraser Companies undertook a very large expansion program, which would undoubtedly have worked out to great advantage had the conditions of early 1929 been maintained. The company, however, is feeling the effects of too rapid expansion in a period of depression in the pulp and paper industry. The working capital position has been more or less seriously depleted in recent months. Certain difficulties were met when a large order of catalogue paper for a Chicago account had to be adjusted. The financial standing, moreover, is weakened by ever-increasing bank loans and other liabilities, and through the undesirable accumulation of inventories. The company has valuable assets, up-to-date properties and big timber limits, which make its acquisition attractive for any of the large operators in the industry.

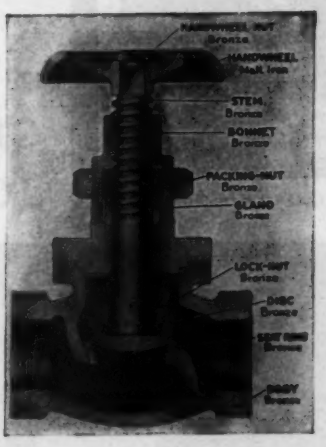
The groundwood mill at St. George, which is controlled by the St. George Pulp and Paper Co., has been closed. It has not been operating regularly for some years, but only at intervals, when market conditions warranted. The stock of pulpwood will be transferred elsewhere.

❖ BRITISH COLUMBIA ❖

B. C. Pulp and Paper Installs Large Barker

Lawrence W. Killam, president of the British Columbia Pulp and Paper Co., has announced an important expansion program for that company. He has ordered the installation of a barker and chipping plant which will be the largest of its kind in the world, and these will form a part of the company's Port Alice Division, Vancouver Island. The barker will be of the Thorne type, designed by C. B. Thorne, vice-president of Canadian International Paper Co. It will be installed by the Canadian Allis-Chalmers Co. The chipper to be installed will be the product of the Karlstads Machine Works of Sweden, the actual installation being done by Paper Mill Equipment Co., Ltd., Montreal.

The heaviest Thorne barker so far manufactured will be installed, capable of handling logs 10 feet long and with a diameter up to 22 inches. This barker will be installed in the yard outside the Port Alice mill and the barked wood will be conveyed direct to the chipper inside the mill, the logs being left intact without being split. Splitting equipment is being installed to handle logs about 24 inches in diameter, as it is hoped that the barker will eventually handle



You can regrind the seating surface of these GLOBE VALVES without removing them.

THE Eastwood "Perfection" Globe and Angle Valves in acid bronze or stainless steel are practically indestructible. This is because you can remove the seating surface, when it shows signs of wear and regrind. The valve itself stays in the line. All parts are renewable, including the disc and seat ring. Maintenance costs are very low.

This valve is of the outside screw type. Can be repacked under pressure with valve wide open. Threads are easily oiled.

All straight lines in the body are eliminated. Long curves give the least possible resistance to the flow. No matter how the valve is placed in the line, it is impossible for sediment to settle on stem threads and cause abrasion.

53 years experience with the special operating conditions in pulp and paper mills enables us to say with confidence that Eastwood "Perfection" Valves will give you years of faithful service.

EASTWOOD WIRE CORPORATION

Belleville, N. J.

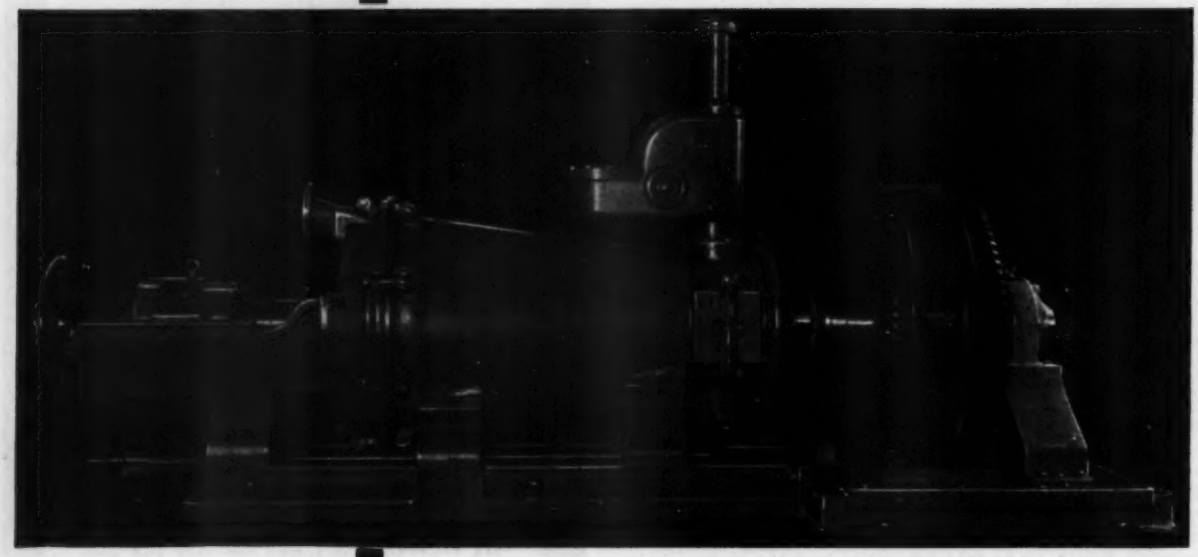
(Established 1877)

"American Paper Made On American Wires"

EASTWOOD
"Perfection" WIRES
"Perfection" VALVES

PATENTS APPLIED FOR

▪ THE APPLETON CLOSE-COUPLED JORDAN ENGINE



25% SHORTER

Mounting the motor direct on the shaft makes the Appleton Close-Coupled Jordan 25% shorter than the direct connected type with a flexible coupling transmission. Four or five extra feet are gained in which to pull the plug, making this Jordan more adaptable to install, especially in limited floor space. Mills that are speeding up production or changing to grades of paper demanding increased refining capacity often find themselves cramped for room in which to install additional Jordans. They will appreciate the advantage of this shorter Jordan. Mounting the motor direct on the shaft close to the load eliminates the flexible coupling and provides a more efficient and a more profitable power application. These are important factors that contribute directly to the superior operating performance of the Appleton Close-Coupled Jordan.

▪THE APPLETON MACHINE COMPANY

Appleton
Wisconsin

logs of larger size. This installation will involve the establishment of a new conveyor equipment to carry logs from the present log haul. The cost of the entire installation will be upwards of $100,000.

Judgment has been handed down at Vancouver by Mr. Justice Fisher, dismissing the action by Pacific Mills, Ltd., against Union Steamships, Ltd., in which the former company claimed $7,530, the value of 530 bales of pulp lost from a scow in Johnston Straits on October 3, 1929, in collision with the steamship Catala. The accident happened early in the morning in the vicinity of Ripple Rock when the Catala sought to pass the tug Chieftain towing the scow.

On August 1, Provincial Government officials took over the management of the Crown timber office in New Westminster, pursuant to the transfer of the railway belt lands to the province by the Dominion Government. It has not been announced whether the office will be kept open in New Westminster for the handling of the considerable timber and land business in the railway belt. The alternative is to move the office to Vancouver or Victoria. The New Westminster Crown timber office is one of the oldest in that city, having been opened in 1873.

Starting Afforestation Program

Marking a distinct forward step in the creation of a provincial forest nursery on the Pacific Highway, near Vancouver, a process that has been under way for some months, some 90,000 seedlings have been started on their way to become forest giants, being planted in six plots of ground which, at the beginning of this year, presented the same raw appearance as the rest of the famous Green Timber area which has been logged.

This planting of seedlings might be described as the second step in the general scheme which contemplates reforestation of a section of land, as well as the creation of a 40-acre nursery. The first was the planting of some 65,000 to 70,000 two-year old trees in logging slash, part of the area to be reforested.

A section of land lying on both sides of the highway has been transferred from Dominion to Provincial control for this experiment in reforestation. Part of it, that lying to the southwest of the highway, has not yet been logged, but the axes are ringing in the bush and presently it too will present the same desolate scene, typical of newly logged lands, as that in the midst of which this creative labor is now proceeding.

As a preliminary to the execution of a task of magnitude, a contract was let for clearing and grading five acres. This job is now practically completed. It is anticipated that a contract for clearing another five-acre patch will be let shortly. This will be continued until the 40 acres set apart for the nursery have been cleared. Meantime, half an acre has been planted with seedlings.

To meet the requirements of sectional business and the new plant extension work, the Powell River Co. is building another paper scow to handle 500 tons of newsprint at each loading. Construction is in the hands of the Burrard Shipbuilding and Engineering Co. The Powell River Co. already has five scows in operation handling paper and other products between Powell River and rail heads at Vancouver.

Babcock & Wilcox Install Large X-Ray Plant

The St. John X-Ray Service Corporation, 505 Fifth Avenue, has installed what is said to be the first X-ray plant of its kind at the Barberton, Ohio works of The Babcock & Wilcox Company.

The photographic apparatus will be used primarily for routine inspection of welded seams in pressure vessels, heat exchangers and similar equipment.

Dr. Ancel St. John, president and technical director of the company which bears his name, says that the Babcock & Wilcox X-ray plant is certainly the first of its kind and in all probability, the most powerful as well.

WEIGHT FIGURES MUST BE RIGHT

Weight figures are the fundamental basis of all costs—and all profits—in the paper industry. Errors in other figures can be corrected by checks and balances but wrong weights, once on your books, can never be caught. And remember, too, all other figures based on these incorrect weights can never be dependable. Weight figures must be right!

Today in hundreds of mills, Toledo Scales stand guard against weighing errors. The paper industry knows that Toledo Weight Control figures are right—always. Costs, when protected by Toledo accuracy, are dependable.

Call the nearest Toledo Scale Office and a trained expert will call and survey your weighing equipment without charge or obligation. If your weight figures are safe, he will tell you so; if they are dangerous, you want to know it.

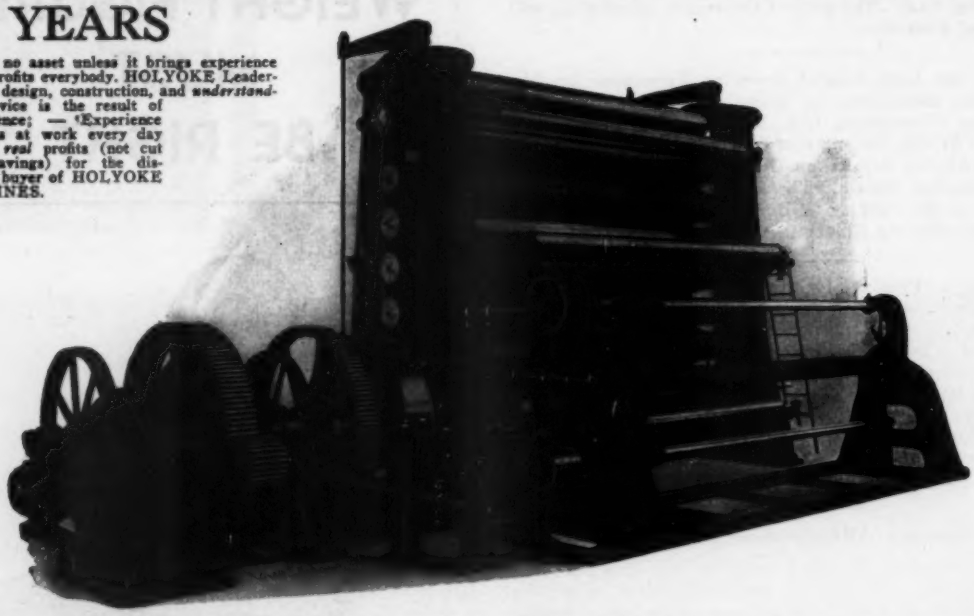
Toledo Scale Company, Toledo, Ohio.
Canadian Toledo Scale Company, Ltd.,
Windsor, Ontario.

TOLEDO SCALES

NO SPRINGS . . HONEST WEIGHT

65 YEARS

Age is no asset unless it brings experience which profits everybody. HOLYOKE Leadership in design, construction, and *understanding* service is the result of Experience; — 'Experience which is at work every day making *real* profits (not cut price savings) for the discerning buyer of HOLYOKE MACHINES.



HOLYOKE SUPER CALENDERS have been built by the HOLYOKE MACHINE COMPANY for 65 years

HOLYOKE Super Calenders stand the test of "your moneys worth." Let any experienced paper mill operator compare a HOLYOKE MACHINE COMPANY Calender with any other and ask him "honest injun" what *he* thinks. Experience is not earned overnight. It takes years of *practical,* understanding service to the paper industry to design machinery which will meet all special as well as usual conditions. When planning a purchase of equipment consult our Engineers,—get details on recent installations,—write

HOLYOKE MACHINE COMPANY
HOLYOKE, MASS.

Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

ENGLAND

Conditions in the Industry

The possibility of an import duty on all manufactured goods coming from places outside the British Empire has caused conjecture in the British paper trade as to the likely effects upon the trade of such a development. One authority has pointed out that of the total imports of nearly one million tons of paper about one-third is newsprint, half of which comes to us from Continental mills and the other half from Canada and Newfoundland. This would mean that approximately 829,000 tons would become subject to import duty because it comes to us from either United States or Continental mills.

As far as printings and writings are concerned, it is considered that as a large proportion of this is surplus from Continental mills and sold at "dumped" prices, it has the effect of lowering the selling prices of similar paper made in this country, and, even if the immediate effect of a tariff were slightly to raise selling prices, internal development and competition would soon have the effect of keeping prices down to a level in strict relation to costs of production.

Our present imports of strawboards and cardboards amount to about 634,000 tons, and it is doubtful how far British papermakers could supply this very big tonnage of paper if an import duty were imposed sufficient to prevent a large proportion of it from being imported from foreign mills.

Wrapping papers are already protected to the extent of 2d. in the shilling, and some idea of the beneficial results of this may be gathered from the fact that during the past three years over one and a half million pounds has been expended on new plant and machinery, 1,000 more workers are in employment, mills which had been closed have been reopened and are doing good business, and the prices of all grades of paper have been reduced 15 per cent. One authority has stated that given a fixed policy in favor of the continuance of the present safeguarding duty, it is safe to say that in a very few years practically the whole of the wrapping papers used in this country would be of British make.

The British paper trade is quiet at the present time, but it has to be borne in mind that July and August are holiday months and the slackest seasons of the year for the printers. In the past, British papermakers have been able to export about one-fifth of the total actual output of their mills, but the prospects for overseas business at present are not too good. Indian trade has fallen off, for paper is included among the items affected by the boycott of British imports in general.

There is also the fact that India's own mills are doing much bigger business than ever before, although they cannot turn out anywhere near the quantity that the country requires.

Australia has been our biggest customer abroad for the last ten years, for that country with New Zealand has taken a tonnage equal to all the rest of our overseas customers put together; but there is a temporary setback to the progress of trade and development in the Commonwealth of Australia, and higher tariffs are now imposed on all imported manufactured goods. Even British printing papers which have for so long had a free entry are now to be subject to an import duty of £1. per ton.

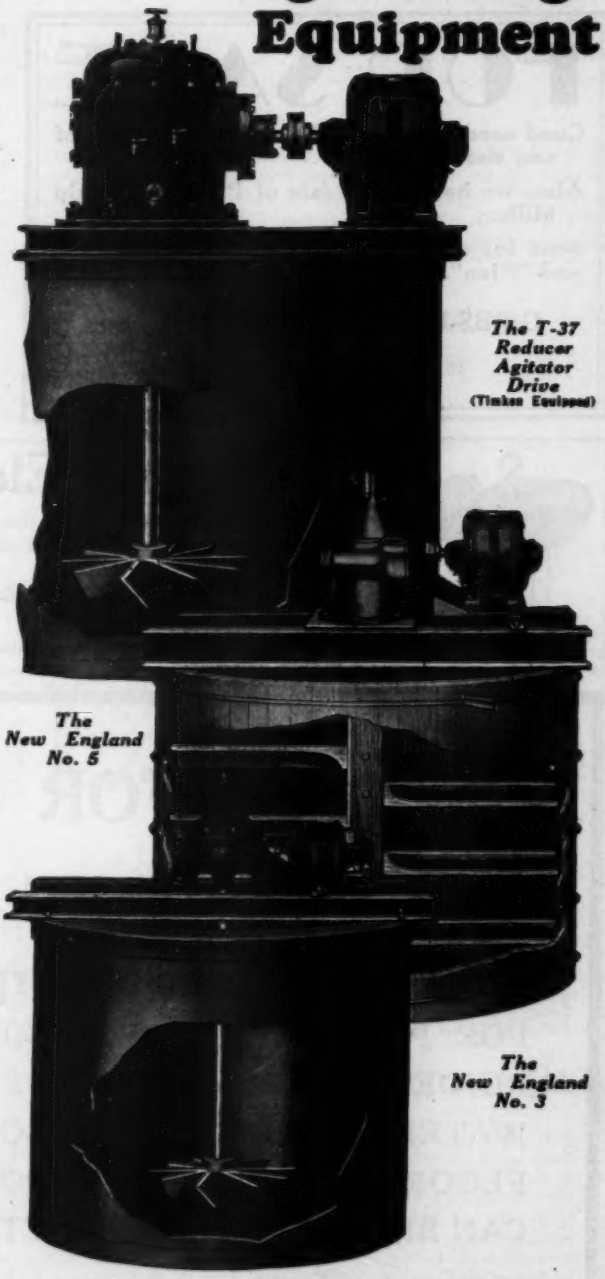
Four-fifths of the space in the British Industries Fair to be held at Olympia, London, and Castle Bromwich, Birmingham, from February 16 to 27 next year, has already been let, the total area booked in the two sections up to August 1 amounted to more than 400,000 square feet. In the London section where the area available is 300,000 square feet, bookings up to August 4 amounted to 236,000 square feet, which is more than the amount booked at this time of the year for any previous fair.

It has been pointed out recently that we as a nation suffer in a way that is unknown to the United States papermakers from foreign competition, but, making allowance for this serious drawback, the paper trade of this country will never be in a really healthy condition until the whole of the sales side of the trade is reorganized upon a sound footing.

A bright spot in our export trade is British Malaya, where

for fillers—sizes—colors use

New England Agitating Equipment



The T-37 Reducer Agitator Drive (Timken Equipped)

The New England No. 5

The New England No. 3

Ready to put to work—strong rugged units designed to operate with maximum efficiency and economy. Send for complete details and specifications.

The New England Tank & Tower Co.
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FOR SALE

Good used Paper and Pulp Mill machinery of any description.

Also, we handle the sale of Paper and Pulp Mills.

Send for copy of our "Go-Between" Bulletin and "Plan".

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OUR MOTTO—"Service First"

POSITION WANTED—As manager, by expert paper maker willing to allow compensation to be determined by results obtained. Negotiations to be strictly confidential. Address Box 179, The Paper Industry.

It Pays to Advertise Opportunities in this Opportunity Section

Roeper Electric Hoists

For lifting paper rolls, removing calender rolls or raising Fourdrinier wires, use ROEPER Type "R" Electric Hoists—With or without Trolleys—Speeds up to 40 feet per minute—Send for Bulletins.

ROEPER CRANE & HOIST WORKS, Inc.
1724 North 10th Street **READING, PA.**
Member of Electric Hoist Manufacturers Association

FOR SALE

(In Scotch Plains, N. J., 20 Minutes to Newark)

Will Take Stock in Corporation in Lieu of Cash

FOR PARTLY EQUIPPED MILL USED TO MANUFACTURE BINDER BOARD AND PAPER SPECIALTIES. UNLIMITED WATER SUPPLY. GOOD BOILERS. 22,000 SQUARE FEET FLOOR SPACE ON TWO FLOORS. SPRINKLERED. CHEAP. CAN BE USED TO MANUFACTURE CHEMICALS, ETC.

GROSS PAPER CO., Inc.

20 CLINTON ST.,
NEWARK, N. J.
Telephone: Mitchell 3870

in spite of keen competition from other exporting countries in Europe, the imports from Great Britain rose from 894 tons in 1928 to 1,345 tons in 1929. Great Britain in both years supplied between 35 and 40 per cent of the total receipts, the remainder coming largely from British possessions and European countries.

With the purchase of the share capital of Arthur Saunderson & Sons, the directors of the Wallpaper Manufacturers group of companies secured a valuable addition to the business of the combine. Much is expected from this acquisition and from the up-to-date arrangements which have been effected at the new Perivale mill. The financial strength of the combine continues to increase.

❖ SOUTHERN ❖

Cellophane Plant at Old Hickory Completed

Plant No. 2 of the Du Pont Cellophane Division at Old Hickory, Tenn., has just been completed. A large party of officials from the East and branch plants in the South attended the opening. The mill was completed in a record time of five months and will soon go into operation with an expert trained crew from Plant No. 1.

Approximately 400 people will be employed in the mill which will be in charge of L. L. Leach, formerly of Buffalo, N. Y. Alvin T. Twing is superintendent.

Secretary of War, Patrick J. Hurley, and a party of engineers will make a tour of the South early in September, visiting Memphis and proceeding from there to the mouth of the White River in Arkansas. The trip is in connection with the Mississippi River Flood relief and plans are said to include dams at certain protective points. As an aid to navigation and perhaps to power, the primary use will be the control of the waters at tributaries entering the river.

The Champion Fibre to Make Improvements

The Champion Fibre Co., Canton, N. C., will spend more than $200,000 in installing improvements in its plant during the next twelve months, according to a recent statement by Reuben B. Robertson, president of the company.

This will not include and special new building projects, but will be devoted to modernizing the plant equipment.

The company has been running to capacity all the year, and no let down in any of the departments is contemplated, Mr. Robertson said. More than 1,600 men are employed in the fiber plant which makes all kinds of paper products and has a standing order from the United States Government for paper used in millions of post cards.

"Electricity and Its Application to the Pulp Industry," a lecture on the development of writing, papermaking and printing in varied stages from the period of cueniform, papyrus and stylus to the modern methods employed in the printing and pulp industry was given by W. F. Bowld, superintendent of the Buckeye Cotton Oil Mills, Memphis, at the August meeting of the Memphis section, American Institute of Electrical Engineers. The lecture was accompanied by a motion picture depicting the various methods of paper manufacture. The meeting was held in the Memphis Power and Light Co.'s auditorium. The Buckeye Co. in northeast Memphis has recently made elaborate installations for new processes, including the preparation of linters for the manufacture of rayon and blotting paper.

Recent visitors in Bogalusa were C. W. Goodyear, treasurer of the Great Southern Lumber Co. and the Bogalusa Paper Co., and Col. C. W. Gaylord, head of the Gaylord, Inc., large operators of paper box factories including one at Bogalusa. These men expressed pleasure at the developments in manufacturing and trade channels at Bogalusa and stated there is every indication that the mills will continue to operate at full capacity, although many of the mills in the South have not been doing so. The impression generally prevails that mills of the South will be more active after September, though logging conditions have been ideal all summer.

Manufacturers of Chattanooga are elated that initial appropriations for deepening the channel in the Tennessee River from Knoxville to Paducah have been made, and that others will follow in due course. As an aid to navigation and power, this is regarded as of vast importance to cities along the river.

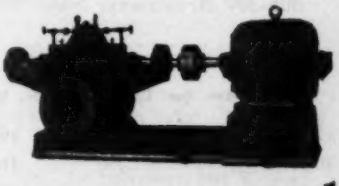
On its fourth annual industrial tour, Arkansas Chamber of Commerce is visiting Michigan, New York, Pennsylvania, Virginia and other states en route to Canada. The paper mills at Kalamazoo, Mich. and the city of Battle Creek were special points of interest. The tour covered about 4,200 miles.

Dr. Simons Joins Skinner & Sherman

Skinner & Sherman, Inc., announce the addition to their staff of Dr. Francis L. Simons as director of research. Dr. Simons was formerly a member of the organization, but for the past two-and-a-half years has been director of research at the Rogers Fibre Company, Kennebunk, Maine. He is a graduate of Brown University and received his doctor's degree from Yale. He has specialized in organic and physical chemistry and has published several papers on catalysis and the chemistry of colloids.

Dr. Simons' training and experience are such that he brings to the research department of Skinner & Sherman, Inc. a very practical viewpoint which is essential in problems of industrial research.

LAWRENCE
"VORTEX" CENTRIFUGAL PUMPS



A heavier, more rugged pump clear through

From suction end to discharge you will find LAWRENCE "VORTEX" PUMPS built to stand up under the severe conditions of the paper industry. Compare it, part for part, with pumps you have used in the past. Unless you are already a LAWRENCE "VORTEX" user, you will be strongly impressed by the fact that each part is heavier, more rugged, and is designed and built equal to the job in your plant. A pump for every purpose, for pumping any liquid—pulp stock, white water, acids, etc.

Write for Bulletins.

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P. O. Box 70 LAWRENCE, MASS.

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ELECTRIFICATION PAPER MILL PROPERTIES

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PULP AND PAPER MILLS
AND OTHER INDUSTRIAL PLANTS
STEAM AND HYDRO-ELECTRIC
POWER PLANTS
DAMS AND OTHER HYDRAULIC
STRUCTURES

◆ OHIO ◆

Westinghouse Equipment for Crystal Tissue Co.

The Crystal Tissue Co., Middletown, Ohio, will shortly place in operation its 136 inch fourdrinier paper machine. This machine is designed to operate over a speed range of 125 to 500 fpm. producing tissue paper and will include a couch, main press, receiving dryer, main dryer section, calender stack and 2 drum upright reels.

The machine will be equipped with Westinghouse sectional electric drive, with individual motors applied to the couch, main press, dryer, and calender sections. This drive was designed to operate on the available d-c. mill power circuits of 225 and 450 volts. A 4 to 1 speed range will be obtained by a special arrangement of motor shunt field control.

The drive will also provide for a special control feature which will permit the use of a "pick-up" felt between the couch and main press section. The individual motors will be provided with the latest type of Westinghouse carbon pile section speed regulators for maintaining the proper speed regulation between sections.

Paper Mill Company's Oldest Employee

On August 28, George W. West, veteran employee of W. B. Oglesby Paper Company, Middletown, celebrated his 86th birthday and completed his 60th year of continuous service with the company, 52 years of which were spent in active service. During the past eight years Mr. West has been retired on the company's inactive list.

George West was born in Brookville, Ind., in 1844, the son of Stephan West and Elizabeth Rolfe West, who was a descendant of John Rolfe and Pocohontas. His boyhood was spent at Hamilton and Middletown. After serving in the Civil War, he returned to Middletown in 1866 and obtained his first job in a paper mill, that of backtender to his brother who ran the machine in the mill of Sutphin and Wrenn.

Mr. West is the company's oldest employee, both in years and in point of service.

A large addition to the finishing room of the Sorg Paper Company is now in construction. The new finishing room, to be thoroughly modern, is being erected at a cost of approximately $50,000. Few paper manufacturing plants are more widely known than the Sorg interests for their product is not only used in this country but throughout the world. It is found in playing cards, in chewing gum and other wrappers, and in dozens of other lines of manufacture which require paper.

Officers of the Champion Coated Paper Company, of Hamilton, elected at the annual meeting of the company are as follows: Peter G. Thomson, president; Walter Randall, vice-president and mill manager; Alexander Thomson, vice-president and manager of sales; Logan G. Thomson, secretary and treasurer.

Logan G. Thomson, secretary and treasurer of the Champion Coated Paper Company, is the owner of "Sylvia," one of the largest vessels to join the private fleet of American yachts, was launched recently at the Bath Iron Works, Bath, Me. The yacht, according to information here, will have a crew of 21, and is equipped with two launches and two lifeboats. It has a cruising range of 6,500 miles. It has a length on the water line of 154 feet, a beam of 26 feet six inches and a draft of 10 feet.

The Boston office of the Reliance Electric & Engineering Co., Cleveland, manufacturers of alternating and direct current motors, has been moved from 80 Federal street to new quarters at 89 Broad street. R. H. Smith will continue as district manager of that territory.

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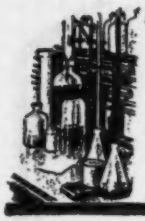
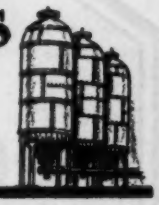
Byron Weston Co.
Whiting Paper Co.

(Basic Patent Sustained By Massachusetts District Court of the United States)



Technical Developments in the Paper Industry

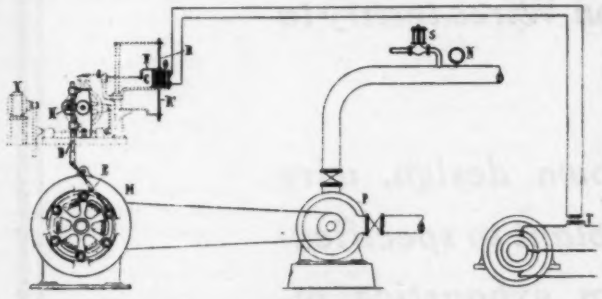
Domestic and Foreign



The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Automatic Regulator for Grinders

THE purpose of the invention is to provide an automatic regulator for maintaining constant the effective work of a group of multiple grinders, in spite of the variation in the discharge of material and feed of the latter to each pocket. According to the invention the regulation of the energy in a efficacious manner is obtained by automatic variation of the pressure of the water acting upon the hydraulic presses in the pockets. When one or more of the pockets are not operating, due to the recharging of the wood, the water pressure



acts automatically upon the pistons of the presses that remain operating to compensate for the work not being done by the inactive pocket. The apparatus is shown in the accompanying illustration.

The multi-cylinder pump (P) is actuated either by direct coupling, or by means of belting, with the aid of an electric motor (M). This variable speed motor attains its speed variation by shifting of the brushes, if it is a triphase motor, or by movement of a slide on a field rheostat, if it is a direct current motor.

In order to operate the mechanism of the variable speed motor, it is provided with a regulator, consisting of a spool (C) with a core (O). A lever (F) is fixed on the core which is maintained in equilibrium by the two springs (R) and (R¹). This lever arm (F) actuates the lever of a ratchet which is able to move in two directions, or any other suitable mechanism, for the purpose of setting the auxiliary motor (X) into operation.

The ratchet wheel controlled by the intermediation of a gear (H), a rack bar (D) made in one piece with a small connecting rod (E) is itself connected to the brush holders in the motor or to the slide of the rheostat. The installation is completed by the manometer (N) and a valve (S) so as to limit the maximum pressure of the pump.

When the grinder is operating normally, the core (O) is in equilibrium, controlled by the two springs (R) and (R¹). If one of the pockets in the grinder is removed from operation due to the necessity of charging for example, the intensity of the current is lowered, the equilibrium is interrupted, and the core is actuated, in turn actuating the other parts of the mechanism intervening between the core and the brush holder in the motor, with the result that the position of the brushes is shifted and the speed of the motor is increased. This causes a corresponding increase in the pressure supplied by the pump. When the pocket is placed in operation again, then the reverse action takes place and the pressure is lowered. Papeteries Navarre. French Patent No. 673,311, filed July 26, 1928.

Bleaching Studies on Wood Pulps

FOUR main points were considered in these investigations. First the variation in the strength curve of sulphite pulps of different character and different origin during the normal bleaching process in the beater, the process being carried out under a condition of normal alkalinity of the bleach liquor and with the purpose of comparing the action of sodium hypochlorite and calcium hypochlorite liquors. In the second place the variation of the strength curve of soda cellulose was determined under like conditions. In the third place the effect of unusual acidity or alkalinity in the bleach bath was investigated. In the fourth place the effect of the concentration of the stock on the strength properties of the paper obtained from it in the case of sulphite and soda cellulose was determined.

A large number of tests were made and a great mass of results obtained which are given in tabulated and graphical form in the original article. The conclusions obtained were as follows:

It was established that the manner of the digestion process is of outstanding importance as far as the variation in the strength properties of the paper obtained from the pulp in bleaching sulphite cellulose.

The bleaching process is represented as a combination of disintegration and bleaching of the fibers, whereat with increasing bleachability of the fibers the oxidizing bleaching process predominates, while in the case of strongly incrustated pulps the chlorinating disintegrating process takes place at a minimum intensity at the start.

Marked differences exist between the activity of sodium and calcium hypochlorites in the hypochlorite bleaching process carried out under a condition of normal alkalinity. The use of sodium hypochlorite is decidedly more advantageous than that of calcium hypochlorite from the standpoint of the bleaching effect obtained as well as from the standpoint of the strength characteristics and chemical properties of the bleached cellulose and finally from the standpoint of the favorable utilization of bleaching-active chlorine. Dr. Hermann Wenzl, Technologie und Chemie der Papier und Zellstoff-Fabrikation, 1930, pages 17-37.

Technical and Commercial Processes in Soda Recovery in Sulphate Mills

A THOROUGH study was made of the economy of the process. Attention was paid to the efficiency of the evaporating process and numerical calculations were made on different liquors. The principle on which the installation works is to evaporate the waste liquor to such an extent that it can be added directly to the rotary furnace without the interposition of a disc evaporator. The liquor is pumped by means of a double-acting pump through two rapid flow preheaters, one connected after the other in series, and heated in such a manner that the vapors that are produced in one preheater are used in the other. The preheaters are provided with separate chambers for multiple circulation of the liquor. The temperature of the liquor is increased by the utilization of the heat in the vapors. Details are also given of the evaporating equipment as well. Regulating devices are provided for controlling the flow of the liquor from the

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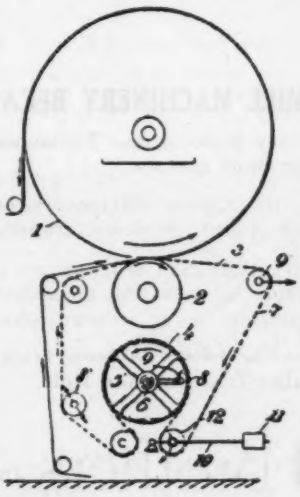
different evaporator effects. Details are also given of the calculations to determine the efficiency of the process, the consumption of steam, etc. W. Guenther and K. T. Kleinicke, Der Papier Fabrikant, 1930, pages 281-288.

Calender Roll with Cooling Roll for Making Paper with One Smooth Side

THE size of the calender roll must increase as the speed of the paper increases. This also means that the size of the roller, which is covered with felt or rubber and which presses against the calender roll, must also increase. This is necessary in order that sufficient pressure should be exerted against the paper web. Inasmuch as this does not always happen, the smoothness of the paper is not what it should be. According to the apparatus which is patented by F. Friedsam in French Patent No. 671,513, a fine finish can be obtained on the paper surface with the aid of rollers of smaller diameter than usual.



The felt (3), which carries the paper and which passes along with the web between the press roller (2) and the calender roll (1), is led over a cooling cylinder (4), the outer side of the felt making contact with this cylinder, while the inner surface of the felt attains a certain light moistening effect. The carrier rollers are not shown in the accompanying diagrams. The pressure that is applied to the paper can be materially reduced under these circumstances. The cooling cylinder (4) is open on both sides and runs in ball bearings, so that it can be easily rotated by the passage of the felt, thus not requiring any drive of its own. The cooling cylinder is sprayed internally with cold water from the spray tube (8); the felt is constantly cooled off externally and the steam or vapor contained in the felt (3) is deposited as moisture in the fabric. The durability of the felt is increased by this cooling effect and it always possesses the same moisture content. It therefore remains compact and pliable. The result is that the finish of the paper on the treated side is excellent, and of a degree not heretofore obtained.

In addition to the tension roll (9) the felt also has another tension roll (12) which is automatically regulated by means of the weight (11). A spray tube can be inserted at the proper point in the apparatus so that the felt is moistened. The mist of vapor from the spray tube may first be permitted to contact with an impact plate, so that only the finest drops of moisture reach the felt. The bearings of the cooling cylinder and also of the calendering cylinder are joined together so that when the cylinder or roller (2) is raised or lowered, the same motion is effected in the cooling cylinder.

Relation Between Temperature and Pressure of Sulphite Liquor

THE author carried out a series of investigations on this subject in consideration of the fact that many works are preheating the sulphite liquor. Accordingly, varying amounts of the liquor, are heated in an autoclave to a definite temperature and the prevailing pressure is measured. The concentration of the sulphite liquor amounted to 3.5 per cent of sulphur dioxide and one per cent of lime. When the gas space over the sulphite liquor was 40 per cent of the volume of the autoclave, the pressure was still zero at a temperature of 55 degrees C. At a temperature of 60 degrees C. it amounted to half an atmosphere. When the gas volume amounted to 20 per cent, the pressure was zero at 50 degrees C; at 54 degrees 0.6 atmosphere; at 10 per cent gas volume above the surface of the sulphite liquor, the pressure is zero at 35 degrees C., and half an atmosphere at 38 degrees C.

When a stronger digestion liquor is used, that is, one that contains four and a half per cent of sulphur dioxide and one per cent of lime, then the pressure rises more quickly. At 40 per cent gas space, the pressure is zero at 55 degrees C. and half an atmosphere at 57 degrees C.; at 20 per cent gas space, the pressure is zero at 35 degrees C., and half an atmosphere at 38 degrees C. At 10 per cent gas space, the pressure is zero at 40 degrees C., and half an atmosphere at 41 degrees C. When the liquor is further heated up to a temperature of 125 to 140 degrees C. in the autoclave, then the pressure rises to seven atmospheres. Data on temperatures and pressure are tabulated in the original article. The conclusion is reached that an appreciable heating up of the sulphite digestion liquor is possible only in pressure vessels. S. Fotijew and B. Moisejew, Bumaschnaja Promischlennost, volume 8, page 24.

Production of Digestion Liquor Containing Sodium Hydroxide

THE process is concerned with the production of a clarified liquor which contains sodium hydroxide from a material containing sodium compounds. The first step in the process consists in subjecting this material to a furnacing treatment which is adapted to form a non-gaseous furnace product including sodium carbonate and carbon. The process is carried out in such a manner that losses of sodium compounds with the furnace gases are minimized. The non-gaseous furnace product is then treated with an aqueous liquor for the purpose of dissolving the sodium compounds contained in it. The resulting solution, which contains suspended carbon, is subjected to a two-stage causticizing treatment. The first stage of the latter process consists in treatment of the liquor with calcium hydroxide in amount less than the chemical equivalent of the sodium carbonate contained in the solution and then with an amount of calcium hydroxide in excess of the chemical equivalent of sodium carbonate remaining in the solution. A sludge, which contains the calcium carbonate, resulting from the first treatment with calcium hydroxide, is separated from the liquor before the final treatment. The sludge is then washed and the recovered wash liquors are used in the process. L. Bradley, Montclair, N. J. and E. P. McKeefe, New York, N. Y. Assignors, Bradley-McKeefe Corpn., New York, N. Y. United States Patent No. 1,754,207, filed March 2, 1921.

Hydration Formation of the Web and Resistance of Paper

SEVERAL new ideas regarding the hydration of paper and the mechanism of the formation of the web, relative to its resistance, are given in this paper. The experiments that were carried out in Sweden were limited to bleached sulphite. It is however claimed that the results can be applied as well to other pulps.

A special form of mill was used in the experiments. A theory is developed concerning three forms of hydration of the pulp and their relation with the refining or beating operation. The first case related to the result obtained by increase in the pressure applied to the pulp emulsion. It was found that an appreciable quantity of water can be eliminated at low pressure. The sizing of the fibers is also considered. Microphotographs are shown in the original article as well as a number of charts. It was determined that the strength of the paper obtained is greatest at a beating degree of 60 degrees S.R. The tensile force exerted on the paper fibers is at a minimum at that point.

The degree of freeness in the paper pulp is determined by the water that the pulp retains during its treatment. This water may be of three different sorts. First there is the external capillary water, then the internal capillary water and finally the water in the walls of the fibers. The combination of fibers with one another in the fabrication of paper does not depend essentially on the felting process, but also upon the phenomenon of colloid-chemical sizing. The importance of the refining or beating operation is that through

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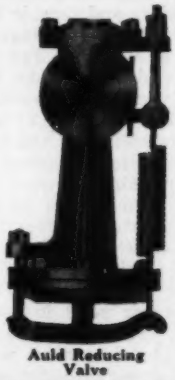

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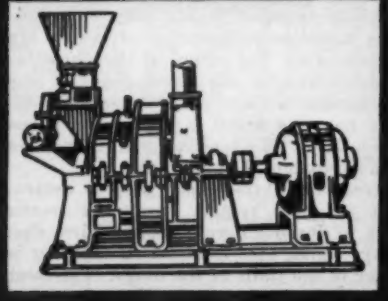

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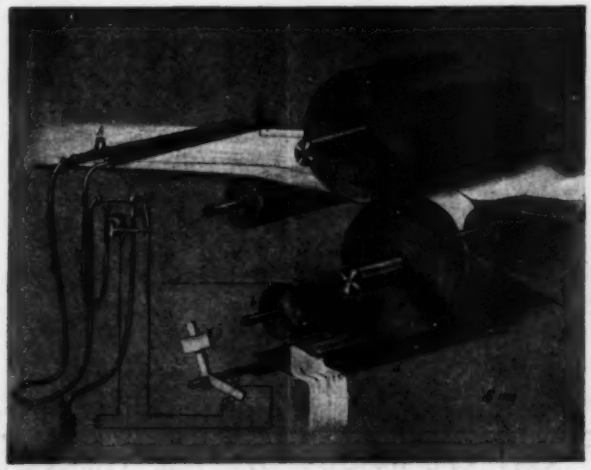
mechanical work the degree of hydration or swelling of the fibrous cells is increased and the fibers become more adaptable to sizing and more plastic. The fibrous walls are constituted of numerous fibrillae. When the exterior shells of the fibrillae swell up, then the colloidal power of the isolated particles increases and likewise this mechanical resistance.

When the fundamental substances swell up, the fibers are converted into fibrillae and the paper that is obtained under these conditions has a more delicate structure. The refining process is not a continuous process, but one which takes place in three stages. G. Porrvik, La Papeterie, 1930, 258-273.

Protecting the Paper Web Against Tearing

IN couching the paper web from the wire to the couch roller, it often happens that a portion of the web remains adhering to the wire and is torn. The device which is shown in the accompanying illustration prevents the tear-



ing of the paper web. The apparatus is placed on the lower side of the wire as near as possible to the couch roll (a). A guide roll (b) provided with a doctor (c) is also located at this point. Under the doctor is located an easily movable aluminum tilting plate (d). The latter can be regulated by means of a weight in such a manner that it is tilted when a weight of 250 grams collects on it. An electro-magnet is connected with the tip-plate, the electro-magnet being shown at (f). This electro-magnet is set into operation when the plate tilts, and thus causes a water valve (g) to open, this valve controlling the flow of water to two spray nozzles located under the wire.

When a break occurs in the paper web on the wire, then a part of the web follows along with the wire and is caught by the guide roller with which the doctor acts. The paper is removed by the doctor and falls on the tip-plate, which in its tilting causes the actuation of the electro-magnet which is connected with the water valve and the spray nozzles. These then separate the paper web into three parts. This limits the break to one to two of these parts, while the remainder of the paper web passes along farther to the presses and the dryers. A bell, which is connected in the circuit of the magnet, rings and the machine tender must then release the pressure in the first press as quickly as possible. As soon as the excess paper has passed the tip-plate, it returns to its original position, and the circuit of the magnet is opened. The water valve is then closed and the spray tube is brought back to its original position and is ready for another break.

Tests have shown that the apparatus works best, when one spray tube is placed at about 30 centimeters from the front edge of the wire, and the other spray tube approximately 60 centimeters from the back edge. The time interval that elapses between the break in the paper web to the actuation of the spray tube is approximately two seconds. In case the break in the paper web starts from the front edge of the wire, then the first spray tube will not be able to hold the break, but this will be done by the second spray tube. In case the break in the paper web takes place in its middle, then usually both of the spray tubes will be active in confining it. Zellstoff und Papier, 1930, pages 251-252.

Effect of Variation in Testing Conditions on the Strength Results Obtained on Chemical Pulp

IN order to determine the effect of the variation in the conditions, under which the pulp is tested, on the strength figures obtained in the tests, a series of experiments were carried out for each of the listed conditions:—

1. Varying weight per unit volume of the paper tested
2. Varying time of settling of the pulp mass in the paper-making frame
3. Varying dilution of the pulp and water mixture
4. Varying pressure applied in making of the paper web
5. Varying duration of the time in which the pressure is applied
6. Varying temperatures of drying the paper web
7. Varying span of the paper sample in the Schopper testing machine

Thus a large number of tests were made and the results are tabulated in the original article. These results are also plotted in curve form. The following interesting conclusions have been obtained:

It is indicated in general that the strictest adherence to testing conditions is necessary in order to obtain comparable results. When errors add up, the discrepancy in the figures may be as high as 25 per cent.

As the weight of the paper sheet per unit volume increases, the tearing length tests reach a maximum, which lies at 80 grams per square meter, and then they decrease again.

Allowing the paper pulp mass to settle in the web-making apparatus decreases the tearing length values by about 15 per cent.

The minimum dilution of the pulp poured into the paper-making apparatus, in order that the dilution should be free of influence on the test results, amounts to 1:750. Lesser dilution causes lower strength results, while a greater dilution has no effect on the strength of the paper.

As the pressure applied in the formation of the paper web increases, the tearing length rises to a maximum, which lies at a pressure of 120 to 150 kilograms per square centimeter, and then it falls.

The tearing length figures increase with increasing duration of the application of the pressure up to a time duration of two minutes, and then it remains almost constant.

The tearing length figures decrease with rising drying temperature.

As the length of the span of the test sample in the testing machine decreases, the tearing length figures increase considerably. E. Grund, Der Papier-Fabrikant, 1930, pages 329-337.

Irregularities in Acid Distribution in Sulphite Digester

A STUDY was made of the behavior of the contents of a digester during the digestion process. It was found that at each shutting off of the steam, the contents sunk to the bottom and had to be loosened up again by the renewed flow of steam before new circulation was obtained. It was also found that the liquor was often stronger at the bottom than at the top.

A large number of samples were taken and analyzed. The tests showed that the liquor taken from the lower portion of the digester had on the average about seven to eight per cent higher acid content than the liquor taken from the upper portion. This phenomenon may be explained on two bases: one, by the assumption of adsorption processes occasioned by the wood; two, by the use of the gas law.

It was also determined that the distribution of acid in the digester after it has attained high temperature is controlled principally by the existing pressure and temperature, and hence this acid distribution can be affected by means of these two factors. The higher acid content in the liquor

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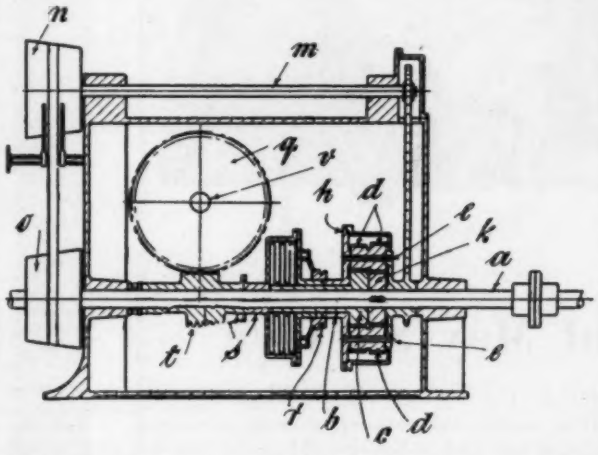
at the bottom of the digester is in itself also more favorable for the sinking of the stock in the digester as where there is more stock, there also is more acid.

The variation in the acid content may be also explained as follows: When it is assumed that the digestion does not take place uniformly in the upper and lower parts of the digester, in consideration of the fact that there is perhaps a difference in the temperature prevalent therein, then the difference in the digestion is explained therewith. This is nevertheless less probable, for temperature differences of a few degrees within so large a mass of boiling and circulating liquor can scarcely be thought of. Dr. A. Ecke, Der Papier-Fabrikant, 1930, pages 297-303.

Variable Speed Device for Driving Papermaking Machines

IN the accompanying illustration (a) represents the main shaft and (b) a sleeve mounted freely on a gear (c) engaging with a series of this shaft. This sleeve forms a part



of the gear wheel (c) engaging with a series of double pinions (d) mounted on the shafts (e) which are fixed by means of the casing (h). The second part of these pinions (d) comes into contact with a gear (k) keyed on the shaft (a). The casing (h) engages with a shaft (m) which is mounted in the manner indicated on the figure, that is so that it can turn. On this shaft (m) is keyed a conical pulley (n) which is connected by means of the belt (o) to another conical pulley on the shaft (a). This arrangement can be used to connect the sleeve (b) with a sleeve (s) carrying a worm gear (t). This worm gear is connected with a helicoidal gear (q) which is itself connected to the shaft (v).

This shows an application of the general principle of the patent. The general principle consists in using a continuous shaft or a shaft divided into parts. The transmission of power is effected in larger part by means of gears which are keyed to the different parts of the shaft. This allows the relative speeds of the different parts of the papermaking machine to be determined in an appropriate manner. Each unit of the power transmission system can be easily replaced in case of an accident. Thus a gear transmission system is provided for each part of the machine, the different units being interconnected by means of a shaft or sections of a shaft. F. O. L. Chorlton and C. Walmsley & Co. Ltd. French Patent No. 670,983.

Evaporating Black Liquor in Soda Furnaces

EXPERIMENTAL results obtained in the evaporation of the liquor in older types of soda furnace are given in the original article. The various conditions, which have for their purpose a possible change in the location of the soda house kettles and rotary furnaces, such change being effected for the purpose of greater utilization of the indirect evaporating apparatus and the introduction of a more concentrated black liquor into the rotary furnaces, are discussed. The quantity of heat and the temperature, which are necessary for the concentration of the thick liquor in the rotary furnaces, and the circumstance, whether the liquor fuel is obtained in the rotary furnace in form suitable for combustion in the smelting furnace, are determinative conditions in carrying out this process. From the thermal standpoint, the introduction of the thicker black liquor into the rotary furnace can be carried out at lower, average gas temperatures (385 degrees C.) than heretofore (480 degrees C.). Whether or not the liquor fuel is present in form suitable for combustion in the smelting furnaces, can be determined by experiment. Based on the relative high carbon dioxide content of the gases, namely 11 per cent, and the marked carbonization which is connected therewith in the rotary furnace, the assumption is made that the liquor fuel is present in suitable consistency. The addition of pulverized sulphate to the rotary furnace has the effect of giving the liquor fuel (that is the fuel obtained from the waste liquor) the desirable crystalline character. The calorimetric fuel value of the liquor fuel comes out to be apparently somewhat higher due to this addition and furthermore the combustion of the fuel is facilitated in the smelting furnaces. T. Molin Svensk Papp. Tidn., volume 33, pages 18ff.

Digestion of Wood By Means of Aqueous Sulphurous Acid and Ammonia

THE wood is preliminartily treated in the usual manner for the production of sulphite pulp. It is charged into cement-lined digesters. The aqueous sulphurous acid is obtained by saturating water with sulphur dioxide at ordinary temperature and sufficient pressure to produce an eight per cent solution. A strong ammonia solution is added in sufficient amount so that the liquor contains 0.25 per cent by weight of ammonia. Six parts by weight of the liquor to one part by weight of the wood is used. Steam is admitted for four hours, the temperature rising to 100 degrees C. After an additional two hours at this temperature, the latter is raised to 110 degrees C. within one hour and the digestion proceeds at this temperature for 15 to 18 minutes. The washed pulp obtained in this manner figures 51 per cent by weight of the wood charged. C. F. Cross, German Patent No. 495,146, filed Oct. 23, 1924.

Dandy Roll

THE dandy roll, which is shown in the accompanying illustration, is made in the form of a hollow cylinder. A large number of wave-like slots are provided in the cylinder.

These slots extend in the same direction, so as to simulate, when viewed collectively, a thread-like fabric appearance. W. K. Trotman, Holyoke, Mass. United States Patent No. 1,752,311, filed March 30, 1929.

Purification of Chemical Wood Pulp

THIS process is concerned with the purification of unbleached chemical wood pulp. The first step in the process consists in partially bleaching the pulp and then washing the partially bleached pulp. The latter is then treated with a solution of caustic alkali, the pulp and solution being brought together in such amounts and concentrations as to give a resulting suspension having an alkalinity equivalent to that of a caustic soda solution of from approximately five to twelve per cent and a pulp concentration of from approximately five per cent to about ten per cent. The treatment is continued for about ten minutes to six hours. Then the caustic soda or caustic alkali solution is separated from the so-treated pulp. The pulp is then washed. The treated and washed pulp is then subjected to a second stage of bleaching treatment. The finally bleached pulp is washed again. J. D. Rue, Asheville, N. C., assignor, The Champion Fibre Co., Canton, Ohio. U. S. Pat. 1,771,064, Aug. 20, 1928.

So One Thought May Survive

IN a lifetime of painstaking, eye-tiring effort, the medieval monk made a few copies of some precious book whose ideas must be passed on to posterity. Hundreds of things that might now seem to be worth knowing were discarded into an unrecoverable oblivion because the book maker had to limit his copying to the few things he chose as most important.

Today our literature is multiplied, not a letter at a time, but by the carload. Most that is printed is of fleeting value—much indeed, valueless. But among the tons of printing there are passed on, to all who wish to know, the worth-while ideas of the human race, those ideas that may seem of passing moment today only to be judged important by the next generation.

The censorship imposed by lack of paper long held back literature, restricted its quantity, limited its universality. Generous amounts of paper have made possible the presses that imprison the ephemeral thought that some future generation may release for the broad benefit of mankind.

HAMMERMILL PAPER COMPANY

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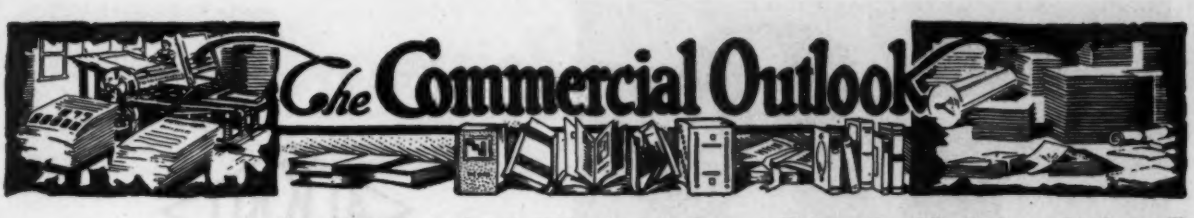

New York, September 2, 1930.

THE latter half of August, or the fortnight immediately preceding the Labor Day holiday, is invariably a quiet period for the paper industry, and this year witnessed no digression from this general rule. The market for paper of most kinds has been on the dull side of late. There has been, of course, activity of routine character and scope, but demand has been on a noticeably confined scale, and the industry as a whole has suffered along with practically all other manufacturing industries from the depression which seems to have seized the country with a vengeance. In fact, the dullness in the paper industry can be traced directly to the slowness in other lines of production and trade.

Manufacturers and merchants alike have complained of the market condition. While orders have been received, and in a fairly regular manner, the volume of demand has fallen so far short of normal that many paper mills have found it necessary to curtail their output, and distributors have found the situation very trying, to state the case mildly. Buyers have held off wherever possible, and when they have ventured into the market they have absorbed supplies only in small tonnage, while limiting purchases to bare requirements. Moreover, vacations have absented a good many consumers from their desks, and in numerous quarters the attention of buyers has been directed to other matters than the acquisition of paper supplies.

However, sentiment without question is on the mend, and the opinion is spreading in various directions that the worst of the general business lull has been seen, and that the situation will register appreciable improvement following the Labor Day holidays and the unofficial termination of the summer and the vacation season. On all sides one hears expressions of confidence that better times are ahead, that employment is due to increase, that the American public is about ready to untie the purse strings and start anew on a campaign of buying, and that the rather drastic curtailment of commodity production in recent months is bound to lead to more profitable prices for manufacturers and distributors and a stronger technical condition in commodity markets.

Paper manufacturers and jobbers are talking optimistically, as well they should, and are anticipating substantial improvement in business. Little things that are occurring day by day go to show that the market is steadily assuming a firmer position. Buyers who place orders for paper today are insisting on quick deliveries; instances have been quoted where paper producers and merchants have been unable to get deliveries to customers rapidly enough to satisfy them. This, it is contended, goes to show that consumers and converters are carrying virtually no stocks; that they have purposely permitted their stocks to become almost totally depleted, which means that once general business turns for the better, demand for paper will develop with a rush and in all probability in big volume.

Production of paper in the United States in June, according to figures compiled by the American Paper and Pulp Association, amounted to 491,188 net tons of all grades, as compared with 525,829 tons produced by identical mills in the preceding month. The daily average of output in June recorded a decline of 1 per cent as compared with the May production, and a decrease of 8 per cent as contrasted with June last year. The June production of newsprint, uncoated book, paperboard, wrapping, bag, writing, tissue and building papers registered a decrease under the June, 1929, output, while production of all the major grades of paper during the first six months of the current year showed a decline as compared with the same period a year ago. Shipments from mills in June last aggregated 487,799 tons, against 515,650 tons in the preceding month, while stocks on hand at mills at the end of June totaled 294,476 tons, compared with 291,062 tons a month previously.

Newsprint output in the United States in July reached 102,840 tons and shipments from mills were 103,018 tons, against 108,398 tons produced and 106,883 tons shipped in the preceding month, according to the News Print Service Bureau. Production in Canada in July was 216,978 tons, compared with 213,634 tons in June, and shipments amounted to 209,511 tons, against 212,670 tons in the preceding month, making a total production for the two countries in July of 319,818 tons, contrasted with 322,032 tons in June, and total shipments of 312,529 tons, against 319,553 tons. During July, 25,426 tons of newsprint were manufactured in Newfoundland and 632 tons in Mexico, so that the total North American production for the month was 345,876 tons, against 346,606 tons in June.

The Canadian mills produced 40,002 tons less newsprint in the first seven months of 1930 than in the same time last year, which was a decrease of 3 per cent. The output in the United States was 20,170 tons, or 2 per cent, less than a year ago, while production in Newfoundland was 20,684, or 14 per cent more, and that in Mexico 2,377 tons less, making a total decrease of 41,865 tons, or 2 per cent. During July the Canadian newsprint mills operated at 71.3 per cent of rated capacity, United States mills at 72.8 per cent, and Newfoundland mills at 106.2 per cent. Stocks of newsprint at Canadian mills at the end of July totaled 52,862 tons and at U. S. mills 29,284 tons, making a combined total of 82,146 tons, which was equivalent to 4.8 days' average production.

Paperboard output in the United States in June amounted to 221,525 tons, contrasted with 240,186 tons produced in the preceding month and 233,164 tons in the similar month last year, according to statistics compiled by the U. S. Department of Commerce. Total production in the first half of the current year was 1,394,215 tons, against 1,510,398 tons in the corresponding period of 1929. Mills shipped 225,336 tons of board during June, against 238,079 tons in May last, and had stocks on hand aggregating 70,904 tons at the end of June, compared with 74,908 tons a month before. Unfilled orders held by manufacturers at the end of June last called for 58,866 tons of board, compared with 63,237 tons at the end of the preceding month.

Consumption of newsprint in recent weeks has been on the low side, as it usually is in midsummer, and the market has been quiet and devoid of interesting feature. Publishers have absorbed supplies in a steady manner but in smaller tonnage than in busier periods of the year. Demand for book paper is rather quiet, although the movement on contracts is reported of fair volume. Wrapping has shown spotty market activity but buying spurts have not been sustained for long; however, quoted prices are well stabilized. Tissue is quiet, while fine papers are favored with a fair demand, chiefly for small lots. Boards are beginning to move in larger quantities and are quotably steady. Fancy papers and specialties are displaying routine market activity.

Proposed Federal Purchase Specifications

The Federal Specifications Board is adopting and promulgating purchase specifications for paper folders and blueprint paper to be used by the various departments of the United States Government.

These specifications are in the formative stage and comments or suggestions as to desirable changes are solicited by the Board. Copies of these proposed specifications may be obtained from the Federal Specifications Board, Bureau of Standards, Washington.

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Papermaking Rags

There is not a great deal of activity in the papermaking rag market at present. The several weeks preceding the Labor Day holiday are usually a quiet period for rags, since papermakers are engrossed with vacations and other matters and do not devote much attention to acquiring raw material, and the situation in the market this year at this time has been no exception to the general rule. Spotty demand for rags of some kinds has been noted, and in certain cases consumers have bought in fair volume, but the market as a whole has lacked activity of really important character or scope. Paper manufacturers evidently are proceeding on the theory that there are plenty of rags to be had, so that there is no reason for them purchasing other than to satisfy actual and immediate wants, and also there is little doubt that conditions in the paper market have been such as to prompt mill purchasing agents to go slowly in augmenting their rag stocks.

On the other hand, it should be stated that rags, or at least a majority of grades used by paper mills, would appear to be in a fairly firm technical position. Low prices, slow demand, a particularly hot summer and other factors have resulted in a considerable curtailment of rag collections all over the country, and there is small doubt that stocks in the hands of dealers everywhere are smaller than usual. This has not been noticed, nor has it proved a market influence because of the comparatively limited demand emanating from consuming quarters for sometime, but it is well within the realms of probability that should demand expand to any appreciable extent, prices would stage a substantial advance. The mere fact that dealers are not pressing sales would seem to show that available supplies are not heavy, and that sellers are biding their time in the confident belief that when the need of larger supplies obliges paper mills to broaden their purchasing, better prices will be obtained.

After a little flurry which caused market rates to jump several dollars a ton, but which was short-lived, roofing rags are back to previous price levels. No. 1 domestic roofing or cloth strippings are quoted at 1.15 cents to slightly higher per pound at dealers' shipping points, and No. 2 roofing at around 75 cents a hundred pounds. Demand for these rags is fair, reports stating that most of the supply offered is finding buyers so long as sellers are willing to accept the figures bid. Old white cottons and thirds and blues are in routine demand, and steady quotably, though most sales are said to be near the low edge of quotational ranges, thereby indicating that the price situation is rather in favor of buyers.

New cotton cuttings of some grades are moving moderately well, but chiefly in small quantities. Fine paper manufacturers are buying when in need of supplies but are seemingly averse to adding to their stocks otherwise even though offerings are being made at attractively low prices. Dealers are putting a great amount of stress on the low production of new cuttings, owing to the curtailed operations of clothing manufacturers, and declare they are securing only about half the customary quantities from cutting-up sources. New No. 1 white shirt cuttings are reported available to paper mills at 8.50 cents a pound at shipping points and perhaps at slightly less, while fancy shirt cuttings are quoted at 5.25 to 5.50 cents, unbleached muslins at 9 to 9.25 cents, washables at 5.25 cents, light silesias at 6.75 cents, blue overall cuttings at 6.75 cents, and bleached canton flannels at 8.25 cents.

Very few transactions are reported in imported rags, due to prices obtaining abroad being beyond a parity with market levels here. Importers say it is difficult indeed for them to import roofing rags profitably, and that the higher grades are held at correspondingly high prices abroad which papermakers refuse to meet other than in exceptional cases.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	8.25– 8.75
White shirt cuttings, No. 2	6.50– 6.75
Fancy shirt cuttings	5.25– 5.50
Washables, No. 1	5.25– 5.50
Unbleached muslins	9.00– 9.25
White lawns	7.50– 7.75
Overall cuttings, blue	6.75– 7.00
Black silesias	4.50– 4.75
Canton flannels, bleached	8.25– 8.50
Canton flannels, unbleached	7.25– 7.50
Shoe cuttings, bleached	6.75– 7.00
Shoe cuttings, unbleached	6.00– 6.25
Light silesias	6.75– 7.00
O. D. khaki cuttings	5.75– 6.00
Mixed khaki cuttings	4.75– 5.00
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1 white, foreign	14.00–15.00
Light prints, foreign	4.00– 4.50
Old Stock—	
Whites, No. 1, repacked	5.25– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.75– 2.00
Thirds and blues, rough	1.40– 1.60
Thirds and blues, repacked	2.25– 2.50
Lace curtains	4.75– 5.00
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	1.75– 2.00
Roofing, No. 1 (cloth strippings)	1.15– 1.25
Roofing, No. 2	.70– .80
Linsey garments, foreign	1.15– 1.25
Dark colored cottons, foreign	.90– 1.00
Blue linens, foreign	3.00– 3.50
Gray linens, foreign	3.00– 4.00
White linens, foreign	7.00– 7.50
Light prints, extra foreign	2.00– 2.25

Rope and Bagging

Paper manufacturers are exhibiting restricted buying interest in both old rope and bagging, and are absorbing only actually needed supplies. However, while prices are undoubtedly in favor of buyers, market rates have recorded little further change, and it would appear as if values have struck levels where dealers are strongly resisting any additional decline. Old manila rope of No. 1 quality and of domestic origin is reported selling at 3.25 cents a pound f. o. b. shipping points, and foreign old rope at 3 cents ex dock New York. Perhaps these figures are being shaded in some instances. Mixed strings are quoted at 80 cents cwt. for the usual run of packing, although dealers ask well above this price for extra quality strings for particular mills.

No. 1 scrap bagging is holding to a price basis of about 1.50 cents per pound at dealers' shipping points, with at least a moderate demand from some paper mills, it being reported that tissue paper manufacturers are absorbing fair supplies. Roofing bagging is down to 60 to 65 cents per hundred pounds at shipping points, and felt paper mills generally are refusing to pay more than these figures.

F.o.b. shipping point and ex dock New York quotations follow:

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LOCKPORT, N. Y.
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	New York and Chicago
Gunny, No. 1 domestic	1.55– 1.60
Gunny, No. 1 foreign	1.50– 1.60
Scrap bagging, No. 1	1.50– 1.60
Roofing bagging	.60– .65
Wool tares, heavy	1.65– 1.75
Wool tares, light	1.55– 1.65
Manila rope, No. 1 foreign	3.00– 3.25
Manila rope, No. 1 domestic	3.25– 3.50
Sisal strings	1.75– 2.00
Mixed strings	.75– .90

Old Paper

While demand for old paper is still on a restricted scale, the market is developing somewhat more activity in certain quarters, and prices of most grades display increased steadiness, if not firmness. Dealers continue to complain that they cannot eke out a profit in waste paper at prevailing market values, and declare they are keeping their collections to a minimum, but consumers contend they cannot afford to pay more owing to the low prices obtaining on wood pulp as well as on finished paper and board.

White shavings are perhaps moving as freely as any class of stock, and prices are holding their own at around 2.50 cents a pound at shipping points for No. 1 soft white, and on a range of 2.50 to 3 cents for No. 1 hard white, depending on the packing. Old kraft paper is steady in demand and price at around 1.35 cents a pound at dealers' shipping points, and white news cuttings continue to bring an average price of 1.75 cents per pound. Folded news is selling in the East at 35 to 40 cents a hundred pounds at shipping points, and at slightly higher figures in the Middle West. Mixed paper, after having staged a little advance, is back to a level of 25 cents a hundred in the East, though western shippers are securing above this price. Book stock is quiet decidedly and is reported available at 95 cents per hundred pounds for No. 1 heavy, and 75 cents for crumpled books.

The following are quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.50– 3.00
Hard white shavings, No. 2	2.25– 2.50
Soft white shavings	2.35– 2.70
Colored shavings	.70– .80
Heavy book, No. 1	.95– 1.05
Crumpled book, No. 1	.70– .80
Ledger stock	.75– 1.20
Kraft No. 1	1.30– 1.40
New kraft cuttings	1.80– 2.00
White blank news	1.70– 1.80
Manilas, No. 1	.45– .60
Manilas, container	.30– .35
Folded news	.35– .50
Sulphite mill wrappings	.50– .60
Old corrugated boxes	.40– .45
New corrugated box cuttings	.50– .55
Mixed paper, No. 1	.25– .35
Common paper	(Nominal)

Pulpwood

Canadian producers claim that the importation of pulpwood from Russia by United States paper mills is nothing more than a gesture, and that their trade with American consumers is not being hampered in the least. Demand in the open market is reported fair, and indications are that business of normal dimensions is transpiring. Moreover, there is a steady movement of wood into consuming channels against contracts. Quoted prices have recorded little or no change.

Mechanical Pulp

Transient buyers are mostly keeping out of evidence in the groundwood market and there is limited current business passing, but supplies are moving regularly against contracts, and as most producers have been handicapped to some extent by drought conditions, little pressure to sell groundwood

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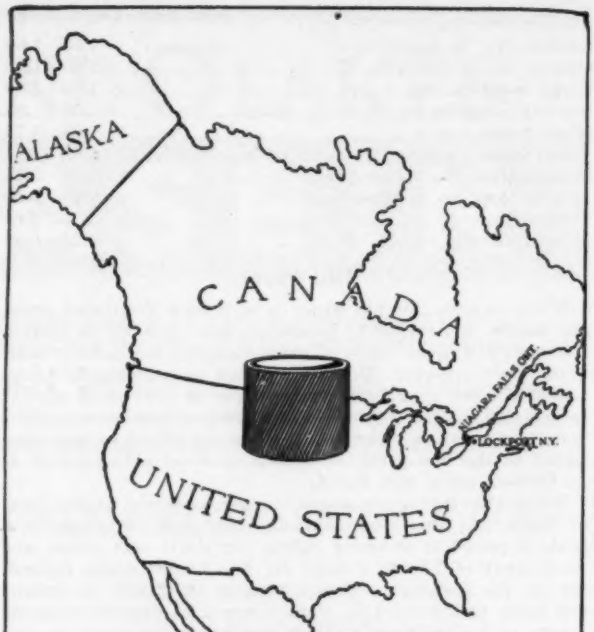

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PRODUCTION . . . .

Kraft	up to	100 Tons
Sulphite	up to	80 Tons
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With 1 Press	42% A.D.
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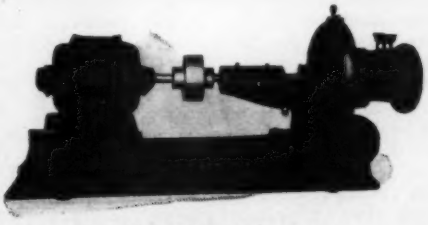

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Port Arthur, Ontario

is noted and market prices are holding quite steady. In fact, mechanical pulp is selling at prices which would appear to be favorable to manufacturers in comparison with prevailing prices of some classes of chemical wood pulp. Domestic groundwood is around $28 a ton f.o.b. pulp mills, and Canadian grinders are asking and receiving $25 to slightly higher at producing points, depending on the freight to consuming centers and the air dry test.

Latest issued statistics show that stocks of groundwood at domestic producing mills totaled 103,541 net tons at the end of June, compared with 95,937 tons at identical mills at the end of May. Production in June amounted to 90,348 tons, against 105,581 tons during the preceding month. The likelihood is that production during the last couple of months has undergone a further reduction, owing to the drought.

Chemical Pulp

Domestic manufacturers are admittedly experiencing difficulty in their efforts to compete with the low prices at which imported chemical wood pulp is being marketed at present, and certain producers on the Pacific Coast have filed charges with the Treasury Department in Washington to the effect that foreign pulp is being shipped to the United States in violation of the anti-dumping law, which charges are now being investigated by the customs officials.

Current business in domestic chemical pulps is on a limited scale. Buyers are operating when their needs oblige them to, but demand is of a character having scant influence of a helpful nature on prices or on the market generally. In fact, prices are gradually seeking lower levels in keeping with prices obtaining on imported pulps. Bleached sulphite of Pacific Coast origin is reported available at 2.85 cents a pound ex dock Atlantic seaboard. Unbleached sulphite of news grade is on a price level of about 2.30 cents a pound at pulp mills, while book sulphite is reported available at 2.50 cents. Domestic kraft pulp is quoted at 1.90 cents a pound, and perhaps less in some cases.

Mills in the United States produced a total of 118,241 tons of chemical pulp in June, against 129,837 tons by identical mills in the preceding month, and had stocks on hand at the end of June amounting to 26,322 tons, contrasted with 26,103 tons a month earlier, according to the American Paper and Pulp Association.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	2.85–4.75
Easy bleaching sulphite	2.50–2.75
Unbleached sulphite, No. 1 strong (news grade)	2.25–2.50
Unbleached sulphite, No. 1 book	2.50–2.75
Soda pulp bleached (delivered)	3.20–3.40
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	1.90–2.75
Screenings, refined	(Nominal)

Chemicals

While there is a fairly steady movement of chemicals to paper and pulp mills against contracts, new orders are reported coming in slowly, and principally for small amounts of the various sorts used in paper and pulp manufacture. Nevertheless prices as quoted show little alteration, as producers are exerting every effort to sustain their markets. Soda ash continues on a price basis of 1.32½ cent a pound f.o.b. works for the 58 per cent light product packed in bags, while caustic is quoted at 3.30 cents per pound at shipping points for spot deliveries. Bleaching powder is quoted at 2 to 2.35 cents a pound at works, and brimstone at $18 to $20 per long ton at mines.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powdered	3.75 – 4.00
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	13.50 –15.00
Caustic soda, spot delivery	3.30 – 3.35
China clay, domestic washed	8.00 –13.00
China clay, foreign	15.00 –21.00
Rosin, Grade E	5.40 – 5.45

Starch—

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Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand, furnished in either Pearl or Powdered form for beater-sizing, increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

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For efficient
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THERE is one certain way to gain better felt washing results, and also effect appreciable washing economies. Make up the washing solution with Oakite and you will find that felts can be cleaned thoroughly in a fraction of the usual time.

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Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the United States and Canada

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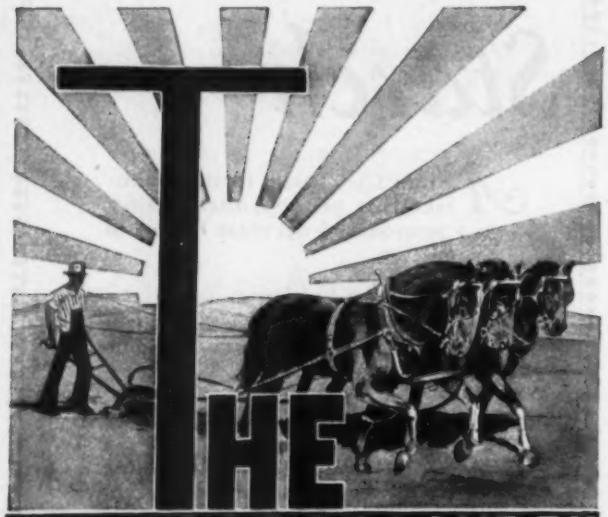

THE "HIDDEN TREASURE" in Your Business

REMEMBER the story of the farmer who plowed a field in search of buried treasure? Finding none he sowed grain -- and reaped a "golden" harvest.

Just so -- a careful search of the possibilities of your business will reveal "hidden treasure" in new and hitherto undreamed-of uses for Paper

Modern packaging is constantly presenting new problems to the Paper industry. Anticipating these needs -- broadening the service through fresh discoveries -- is the purpose of KVP Research Engineers. Their advice is always at the service of industry -- without obligation.

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VEGETABLE PARCHMENT CO.
KALAMAZOO - MICHIGAN
Manufacturing World-Famous Food-Protection Papers

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BAG BUNDLING PRESS

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SERVICE

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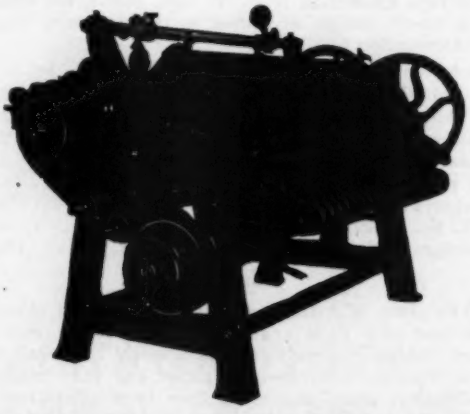
Green Bay, Wisconsin



PAPER CUTTERS
Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.

New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
Colored sulphite	10–30
Colored sulphite	8–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–12.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Cover Stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95– 1.10
Wrapping—	
No. 1 kraft	5.75– 6.25
No. 2 kraft	3.50– 4.50
Southern kraft	3.50– 4.00
Boards—	**New York and Chicago**
Solid news	37.50–40.00
Straw	50.00–55.00
Plain Chip	35.00–37.50
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binders' board	65.00–70.00

Chemicals

(*Continued from page 1121*)

Satin white	2.00 – 2.25
Soda ash, 58 per cent light (bags)	1.32½–.....
Starch, papermakers', in bags	3.77 –.....
Talc (ton)	16.00 –18.00

The La Boiteaux Co., Cincinnati, large distributor of boxboard, announces that Harry G. Williams has resigned as manager of its Chicago office on account of ill health. Elliott Wilson, who for the past five and a half years has been manager of the New York office, will succeed Mr. Williams. Robert J. Blum, who has been connected with the company for ten years, has been appointed manager of the New York Office.

Paper Salesmen Play Golf

The New York Division of the Salesmen's Association of the Paper Industry held its regular monthly golf outing at the Leewood Golf Club in Westchester County, N. Y., on Tuesday, August 19. Owing to the fact that many of the members were away on vacation, the turnout was not so large as at previous outings, but the members and guests present took advantage of the unusually fine weather to turn in some of the best scores which have been made at any of the outings this summer.

Low gross was won by G. D. Wyatt, of THE PAPER INDUSTRY, with a score of 78, par for the course being 71. Mr. Wyatt got an Eagle on the 12th hole, par of which is 5.

Low net was won by Harold M. (Stubb) Early, of the International Paper Company. We do not know just what the reason is, but apparently "Stubb" is what the sport writers call a "money player" as he usually seems to come through when prizes are in question.

Members of the New York Division are hoping that for the Association Tournament Outing in September, they will have as fine a day as they had last Tuesday and that a good turnout accompanied by good weather will finally pry the Harbison Cup loose from the clutches of the Chicago Division.

Customs Duties on Cigarette Paper Adjusted

The Import Committee of the American Paper Industry has announced the conclusion of cases involving 122 importations of cigarette paper and cigarette paper books, under which undervaluation was found on shipments from France. The customs officials believed the imports were undervalued, and an investigation was ordered abroad, and the outcome was the withdrawal of customs officials from France, and the paper was held dutiable at the United States selling price. This was such a heavy increase in the dutiable value that the French paper mills decided to disclose the real figures, and the final adjustment was on the basis of a dutiable value higher than that at which the paper was entered, but less than the United States value. As a result of this experience of the French they are no longer protesting against the presence of American agents in France, but asked for their return.

The two most serious problems before the Import Committee at present involve undervaluation of foreign wall paper, and the proper classification of fancy papers. In a single week twenty problems involving the correct classification of various fancy papers came before the Import Committee's customs experts. The committee experts are working closely with the customs officials to secure a proper interpretation of the new tariff law as it affects such papers.

Gardner & Harvey Acquire Illinois Carton & Label Co.

The Illinois Carton & Label Co., of Chicago, formerly owned by the Illinois Glass Consolidated Corp., Alton, Ill., has been jointly purchased by The Gardner & Harvey Co., Middletown, Ohio and The Richardson-Taylor Printing Co., Cincinnati, Ohio.

The Illinois Carton & Label Co., manufactures folding paper boxes and labels, and will be operated under the same management as in the past, with A. V. Z. Jennings as sales manager and B. L. Hoffman, plant manager. The management of the company will be jointly controlled by the purchasers, with R. A. Taylor as president, and E. T. Gardner, vice-president.

CHEMICAL AND MECHANICAL PULP

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Sarpsborg, Norway—Edsvalla, Sweden
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Bergvik och Ala Nya Aktiebolag, Söderhamm, Sweden
Svanö Aktiebolag, Svanö, Sweden
Aktieselskabet Greaker Cellulosefabrik, Greaker Norway

KRAFT PULP

Nensjö Cellulosa A.—B., Sprängsviken, Sweden
Bergvik och Ala Nya Aktiebolag, Söderhamm, Sweden
Munksunds Aktiebolag, Munksund, Sweden
Kalix Träindustri Aktiebolag, Vanafjärden, Sweden

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CANADIAN KRAFT, LTD.

THREE RIVERS, CANADA

Sulphite Pulp—Paper and Board
J. & J. Rogers Co.
Ausable Forks, N. Y.

Bleached Sulphite—Bleached Soda Pulp
Howard Smith Paper Mills, Ltd.
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Selling Agents **THE PULP & PAPER TRADING CO.**
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"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

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EXPORTS

June witnessed a continuance of the decline in exports of paper from the United States noted during the several previous months, and not only were exportations smaller than in the preceding month but also were below the exports in the corresponding month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. June exports of paper of all kinds reached a total value of $2,483,664, compared with shipments of a value of $2,757,701 in May of this year, and $2,917,486 in June last year. The June exports brought the total for the first half of the current year up to $16,722,889 also registering a decrease as contrasted with exports valued at $18,830,267 in the similar period of 1929.

Exports of newsprint from the United States in June amounted to 1,915,963 pounds, valued at $79,160, against 2,046,119 pounds of a value of $98,287 exported in the preceding month and 2,739,306 pounds of a value of $110,509 in June a year ago. Uncoated book paper was exported in June to the amount of 2,554,667 pounds, valued at $199,497, compared with 2,380,024 pounds of a value of $176,810 in the similar month last year, while exports of wrapping paper were 3,100,821 pounds of a value of $214,922 in June, against 3,211,566 pounds of a value of $230,455 in June, 1929. Writing paper exports declined in value but increased in quantity from 1,955,710 pounds of a value of $220,218 in June last year to 2,274,738 pounds of a value of $180,746 in the same month this year, while exports of tissue and crepe paper declined in value from $80,407 a year ago to $52,634 last June, and sheathing and building paper exports decreased from a value of $70,157 in June, 1929, to $57,093 in the same month of the current year.

Exports of boxboard of paperboard and strawboard were valued at $159,634 in June, against $158,436 in the similar month last year, and shipments of other paperboard were valued at $117,848 in June, contrasted with $168,814 a year ago.

IMPORTS

Wood Pulp

A development of prime interest and of far-reaching possibilities is that domestic producers of chemical wood pulp on the Pacific Coast have made charges to the Treasury Department in Washington that chemical pulp is being dumped into the United States by European manufacturers in violation of the anti-dumping statute. Other than the filing of the charges in Washington, nothing has come of the complaint as yet as the customs officials are investigating the matter, both on this side of the Atlantic and in Europe. The contention of the domestic pulp manufacturers is that pulp is being shipped to this country at prices below those prevailing in the primary sources abroad, and thereby handicapping domestic producers in marketing their pulp. Charges of this sort have been made on several occasions in the past, but have fallen through upon Government investigation.

The market for imported wood pulp is showing rather restricted activity. There is a certain amount of buying being engaged in by paper manufacturers, but current business is far short of what could safely be called normal dimensions, according to reports. Consumers in some cases are absorbing spot supplies; that is, pulp out of stocks on the docks and in port warehouses on the Atlantic seaboard, and some little buying for forward shipment from abroad also is reported, but demand is chiefly routine and has scant influence on the market situation. Nevertheless, the price tone seems steadier, and certainly quotations are being maintained better than they were. Many in the trade are of the belief that prices have at last struck bottom, and that no further recession of consequence will be witnessed. Producers and shippers in Europe are displaying greater resistance to any additional decline, and reports from abroad say that production of some kinds of pulp is being appreciably curtailed in an effort of manufacturers to prevent market rates from falling any lower. Late advices state that kraft pulp manufacturers in Sweden have agreed to reduce their output by shutting down some four or five of the big mills making such pulp and having a yearly capacity of some 133,000 tons. The Swedes also are considering a curtailment of sulphite production, so reports say.

Importations of wood pulp into the United States continue on a moderate scale only, judging from the latest issued statistics covering the month of June. Imports in that month amounted to 75,908 long tons of all grades of chemical pulp, valued at $4,160,671, compared with 89,505 tons of a declared value of $5,104,881 in the preceding month, and bringing the total for the first six months of this year up to 651,799 tons for an average of 108,633 tons monthly, against a total of 671,891 tons or a monthly average of 111,981 tons in the first half of 1929. Imports of groundwood in June were 10,425 long tons, valued at $277,439, compared with 15,564 tons of a value of $432,349 in May, and making a total for the first six months of the current year of 128,866 tons, contrasted with 111,528 tons in the same time a year ago.

Imported strong unbleached sulphite remains on a price level of 2.20 to 2.25 cents a pound ex dock New York or other American Atlantic ports for ordinary prime grades, with a little above these figures asked for extra qualities. Bleached sulphite of prime grade is reported available at 3 cents per pound ex dock, easy bleaching sulphite at 2.50 cents, and ordinary Mitscherlich sulphite at 2.25 cents. Kraft of prime standard Swedish variety is selling at 1.65 to 1.75 cents a pound on the dock Atlantic seaboard. Foreign groundwood is quoted at $32 per short ton ex dock for dry, and $31 for moist pulp.

Current market quotations ex dock New York, and receipts at the port of New York during August, 1930, follow:

Bleached sulphite, No. 1	3.00– 4.25
Unbleached sulphite, strong No. 1	2.20– 2.35
Unbleached sulphite, No. 2	2.10– 2.25
Easy bleaching sulphite	2.50– 2.65
Mitscherlich unbleached, genuine	2.75– 3.00
Mitscherlich unbleached, ordinary	2.25– 2.40
Kraft, standard Swedish	1.65– 1.85
Groundwood, per ton (dry)	32.00–33.00

Castle & Overton, 6,182 bls. from Hamburg; International Trust Co., 300 bls. from Hamburg; Bulkley, Dunton & Co., 6,250 bls. from Iggesund, 1,625 Gefle, 4,650 Stugsund, 3,350 Essvik and 3,160 Hernosand; Parsons & Whittemore, 150 bls. from Rosenborg and 2,400 Gothenburg; Kidder, Peabody & Co., 127 bls. from Gothenburg; Johaneson, Wales & Sparre, 2,910 bls. from Gothenburg, 150 Essvik, 1,000 Wifstavarf, 228 Hamburg and 210 Oslo; E. M. Sergeant Co., 3,195 bls. from Gothenburg; Price & Pierce, Ltd., 500 bls. from Gothenburg and 450 Wallvik; Guaranty Trust Co., 714 bls. from Hamburg and 2,150 Wifstavarf; Stora Kopparberg Corp., 2,275 bls. from Skutskar; M. Gottesman & Co., 2,930 bls. from Rotterdam and 2,520 Sibenik; Pagel, Horton & Co., 3,750 bls. from Gefle and 1,200 Domsjo; Irving Trust Co., 1,500 bls. from Hernosand; J. Andersen & Co., 6,000 bls. from Hernosand and 2,660 Oslo; Lagerloef Trading Co., 735 bls. from Kemi, 320 Rauma, 31 Helsingfors, 152 Kotka and 520 Tolkis; Daniel M. Hicks, Inc., 128 bls. from Hamburg; Atterbury Bros., 4,000 bls. from Oslo; A.P.W. Paper Co., 1,638 tons groundwood from Sheet Harbor; Norwegian-American Line, 508,000 kilos from Bergen; E. J. Keller Co., 738 bls. from Hamburg; Order, 390 bls. from Hamburg, 7,350 Hernosand and 180

PULP

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PAPER

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Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
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Kotka. PULPWOOD—Chase National Bank, 6,326 cords from Archangel; Order, 6,822 cords from Archangel.

Paper Stock

Imports of papermaking raw materials into the United States are falling off to rather a marked degree, taking the unofficial data covering such imports during the last several months as a criterion. Also, official Government statistics for the first six months of this year show a decline in receipts of most classes of material as compared with last year. Imports of papermaking rags during the first half of the current year amounted to 180,516,279 pounds, valued at $3,777,923, against 211,729,844 pounds of a declared value of $4,268,358 in the same period of 1929, while imports of waste bagging and waste paper in the six months' period were 57,388,866 pounds, valued at $658,403, compared with 71,927,199 pounds of a value of $872,122 last year, and of old rope and all other paper stock to 68,231,310 pounds, valued at $1,187,805, contrasted with 56,663,381 pounds of a value of $1,716,753 in the first six months of last year.

August imports were featured by a pronounced decrease in receipts of rag stock. Arrivals of all kinds of paper stock excepting wood pulp at the port of New York last month, these data being taken from manifests of steamers reaching New York during August, were as follows:

Old Rope—William Steck & Co., 48 coils and 74 bls.; Brown Bros. & Co., 240 coils and 192 bls.; S. Birkenstein & Sons, 30 bls.; Darmstadt, Scott & Courtney, 62 bls.; R. W. Zundel, 10 coils; Fritz Stern, 66 bls.; Ellerman's Wilson Line, 12 coils; Anglo-South American Trust Co., 69 coils.

Old Bagging—Castle & Overton, 247 bls.; International Trust Co., 145 bls.; Banca Commerciale Italiana Trust Co., 657 bls.; Arnold Bernstein, 60 bls.; E. Butterworth & Co., 287 bls.; Brown Bros. & Co., 91 bls.; Marine Trust Co., 146 bls.; Van Oppen & Co., 147 bls.; E. J. Keller Co., 70 bls.; Order, 125 bls.

Rags—V. Galaup, Inc., 4 bls.; E. J. Keller Co., 685 bls.; Castle & Overton, 519 bls.; E. Rosenbloom, 8 bls.; Daniel M. Hicks, Inc., 54 bls.; Darmstadt, Scott & Courtney, 37 bls.; A. Gindorf, 6 bls.; J. Reiss & Co., 12 bls.; James Rosenberg, 128 bls.; Guaranty Trust Co., 130 bls.; National City Bank, 50 bls.; A. W. Fenton, Inc., 157 bls.; Baring Bros. & Co., 82 bls.; C. B. Richard & Co., 49 bls.; Globe Shipping Co., 15 bls.; Amtorg Trading Co., 356 bls.; Van Oppen & Co., 41 bls.; R. F. Downing & Co., 44 bls.; Order, 201 bls.

Miscellaneous Paper Stock—Darmstadt, Scott & Courtney, 145 bls.; First National Bank of Boston, 158 bls.; International Trust Co., 110 bls.; Federated Metals Corp., 22 bls.; J. Cohen & Sons, 57 bls.; Castle & Overton, 257 bls.; Brown Bros. & Co., 126 bls.; S. Birkenstein & Sons, 288 bls.; E. Butterworth & Co., 40 bls.; Irving Trust Co., 125 bls.; Milton Snedeker Corp., 48 bls.; American Express Co., 45 bls.; E. J. Keller Co., 110 bls.; Order, 76 bls.

Paper

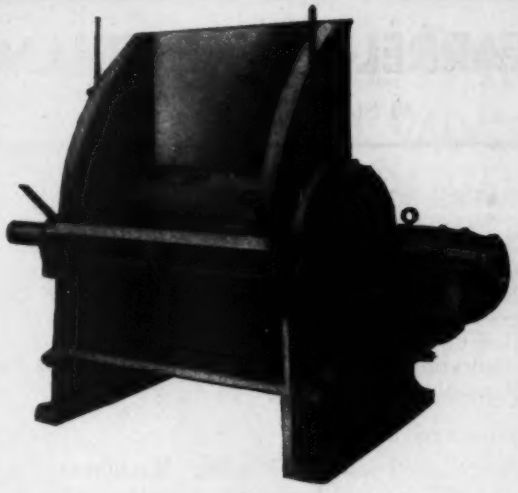
Importations of paper into the United States in June reached a total value of $8,895,924, as compared with receipts amounting in value to $13,480,291 in the similar month a year ago, while imports during the first six months of the current year were valued at $70,955,355, showing a decrease as compared with $77,305,244 worth imported in the corresponding period of last year. Imports of standard newsprint, constituting the great bulk of the total importations, amounted in value to $62,466,773 in the first half of this year, against $68,470,491 in the same time of 1929.

Imports of paper in August were of fair volume only, judging from receipts through the port of New York. Arrivals of paper of all kinds at that port last month, these data being taken from steamers reaching New York during the month and therefore unofficial, were as follows:

Printing—W. H. Bell, 7,645 rolls from Liverpool, N. S.; Perkins-Goodwin Co., 1,084 reels from Hamburg; Keuffel & Esser Co., 97 rolls and 10 cs. from Hamburg; Martin & Bechtold, 19 cs. from Hamburg; Guaranty Trust Co., 64 bls. from Hamburg; The Times Co., 111 reels from Gothenburg; E. Dietzgen & Co., 57 cs. from Hamburg and 214 cs. Rotterdam; T. N. Fairbanks, 95 cs. from Genoa and 2 cs. Havre; Stora Kopparberg Corp., 249 reels from Gothenburg; F. C. Strype, 41 cs. from Rotterdam; Jay Madden Corp., 288 reels from Kotka; Ward Line, 24 bls. from Bremen; Baldwin Paper Co., 293 reels from Bremen; C. Steiner, 49 cs. from Rotterdam; Johaneson, Wales & Sparre, 18 rolls from Gothenburg; Order, 136 bls., 260 reels and 7 cs. from Hamburg, 997 reels Kotka, 1,029 reels Bremen and 287 rolls Oslo.

Wrapping—Arkell Safety Bag Co., 2 cs. from Havre; Atlantic Forwarding Co., 16 cs. from Hamburg; Standard Products Corp., 29 cs. and 4 rolls from Antwerp; C. Steiner, 12 cs. from Hamburg; Borregaard Co., 1,150 reels and 282 bls. from Gothenburg; Chemical Bank & Trust Co., 173 bls. from Gothenburg; F. L. Kraemer & Co., 254 bls. from Gothenburg; J. P. Hefferman Paper Co., 4 bls. from Rotterdam; H. Reeve Angel & Co., 42 bls. and 51 rolls from Gothenburg and 3 cs. Antwerp; E. Dietzgen & Co., 52 cs. from Rotterdam; Yardley & Co., 10 cs. from London; D. S. Walton & Co., 10 bls. and 27 rolls from Gothenburg; Wilkinson Bros. & Co., 122 cs. from Gothenburg; Sylvania Industrial Corp., 100 cs. from Antwerp.

Cigarette—Standard Products Corp., 308 cs. from Havre; H. H. Straus, 551 cs. from Havre; DeMaudult Paper Corp., 2,905 cs. from



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Builders of machinery since 1854

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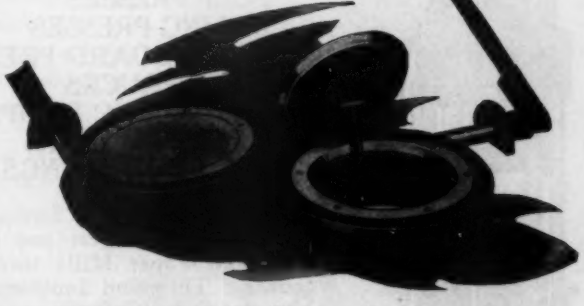
CAST IRON AND BRONZE —OR BRONZE THROUGHOUT.



This valve is standard equipment on all new Dayton Beaters. Can be installed in most any other type—built in 8, 10, 12, 14 and 16 inch dia. with plain or flanged outlet. Also special valves to suit needs. One of our many incidental beater room requirements. Write for complete list.

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Paper and Board Calenders — Chilled Iron Rolls for Various purposes — Roll Grinders, Roll Calipers—Coating, Saturating, Silicating, Parafining, and Waxing Machines — Hydraulic Pulp Dehydrating Presses, Calender Roll Recovering Presses. See MECHANICAL CATALOGUE, A. S. M. E.

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—for handling rolls

Designed particularly for the paper industry, these lively little dollies *easily* handle rolls and cases up to 4,000 lbs. One man can load and unload from sides or ends. Built to *last*. Hundreds in use. *Money back if you're not satisfied.* If your dealer can't supply you, *write us.*

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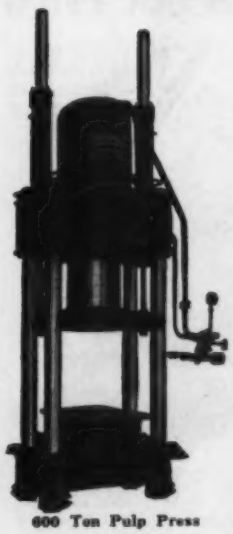
Six models—low wheel, high wheel and flat top—a model for every purpose.



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Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.

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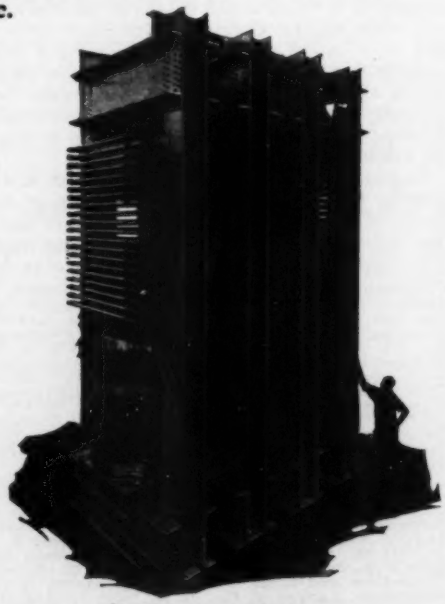

2000-ton 12'-6"x4'-6" 20 Opening Wall Board Press

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St. Nazaire and 312 cs. Havre; American Tobacco Co., 1,200 cs. from Bordeaux; British-American Tobacco Co., 14 cs. from Southampton; P. J. Schweitzer, Inc., 124 cs. from Marseilles.

Writing—Guibont Freres & Co., 3 cs. from Havre and 24 cs. Southampton.

Filter—C. Sleicher & Scholl Co., 25 cs. from Hamburg; E. Fougera & Co., 50 cs. from Southampton; G. Leuders & Son, 12 bls. from Bordeaux; H. Reeve Angel & Co., 46 bls. from Southampton and 38 cs. London.

Tissue—F. B. Vandegroft & Co., 27 cs. from Liverpool; Atlantic Forwarding Co., 21 cs. from Hamburg.

Hanging—F. J. Emmerich & Co., 13 cs. from Hamburg and 7 bls. Havre; C. A. Haynes & Co., 74 bls. from London; Graves Wallpaper Co., 3 cs. from Hamburg; Irving Trust Co., 14 cs. from Hamburg; R. F. Downing & Co., 10 cs. from Southampton and 4 cs. London; C. Grimmer, 2 bls. from Southampton; Guaranty Trust Co., 27 cs. from Hamburg and 3 cs. Havre; G. J. Hunken & Co., 3 bls. from Bremen; Order, 2 bls. from London.

Photo—Globe Shipping Co., 28 cs. from Bremen and 12 cs. Antwerp; J. H. Schroder Banking Corp., 11 cs. from Bremen; J. J. Gavin & Co., 6 cs. from Southampton; Gevaert Co. of America, 57 cs. from Antwerp.

Drawing—Keuffel & Esser Co., 146 cs. from Hamburg and 7 cs. Rotterdam; H. Reeve Angel & Co., 8 cs. from London; Favor, Ruhl & Co., 7 cs. from London.

Board—Henry Fuchs & Sons, 253 pkgs. from Hamburg and 28 bls. Gothenburg; Manufacturers Trust Co., 7 bls. from Hamburg; Lagerloef Trading Co., 368 bls. from Kotka and 272 bls. Wiborg; Houbigant, Inc., 26 cs. from Havre; Coty, Inc., 14 cs. from Havre; Fibre Products Mfg. Co., 7 bls. from Gothenburg; Chatham & Phenix National Bank, 57 bls. from Gothenburg; International Acceptance Bank, 22 cs. from Antwerp; Order, 31 bls. from Hamburg.

Miscellaneous—Whiting-Patterson Co., 16 bls. from Southampton; D. C. Andrews & Co., 4 cs. from Bremen, 2 cs. Glasgow and 4 cs. Havre; F. Murray Hill, Inc., 8 cs. from Bremen and 7 cs. Southampton; S. Gilbert, 120 cs. from Bremen; F. L. Kraemer & Co., 25 cs. from Bremen, 9 cs. Southampton and 14 cs. Havre; Rohner, Gehrig & Co., 2 cs. from Havre; Keller-Dorian Paper Co., 39 cs. from Havre; Hensel, Bruckmann & Lorbacher, 25 cs. from Havre, 2 cs. Hamburg and 34 cs. Bremen; P. C. Zuhlke, 8 cs. from Antwerp; Judson Freight Forwarding Co., 6 cs. from Hamburg; Tiffany & Co., 4 cs. from Havre; Selsi Co., 16 cs. from Havre; Gershel & Newman, 10 cs. from Havre; J. E. Bernard & Co., 13 cs. from Gothenburg and 2 cs. Bremen; Borden & Riley Paper Co., 12 cs. from Antwerp; Hurley-Johnson Corp., 10 bls. from Liverpool; Globe Shipping Co., 24 cs. from Rotterdam; Canson & Montgolfer, 12 cs. from Havre; Walker, Goulard, Plehn Co., 10 cs. from Oslo and 10 bls. Gothenburg; J. Beckhardt & Co., 143 cs. from Bremen and 26 cs. Rotterdam; Dingelstedt & Co., 6 cs. from Bremen; International Forwarding Co., 35 cs. from Rotterdam, 38 cs. Antwerp and 7 cs. Hamburg; H. Holinder, 10 reels from Bremen; T. D. Downing & Co., 4 cs. from Hamburg; W. J. Byrnes & Co., 2 cs. from Hamburg; Henschel, Naeve & Co., 8 bls. from Bremen; American Express Co., 75 cs. from Havre; J. H. Schroder Banking Corp., 12 cs. from Hamburg; F. C. Strype, 3 cs. from Genoa; P. H. Petry & Co., 10 bls. from Havre; Manufacturers Trust Co., 20 cs. from Hamburg; Bank of America, 18 cs. from Hamburg; Heemsoth & Basse, 9 cs. from Hamburg; J. E. Andresson, 8 cs. from Gothenburg; G. W. Sheldon & Co., 4 cs. from Southampton; W. A. Foster, 4 cs. from Southampton; Thomas & Pierson, 2 cs. from Southampton; D. F. Young, 2 cs. from Hamburg and 4 cs. Bremen; Japan Paper Co., 83 cs. from Genoa, 5 cs. Havre, 4 cs. Rotterdam and 20 cs. Yokohama; P. C. Kuyper & Co., 2 cs. from Bremen; Meadows, Wye & Co., 18 cs. from Havre.

Origin of "Wove" and "Laid" Paper

In a review of Dard Hunter's book on **Papermaking Through Eighteen Centuries**, appearing in the **Saturday Review of Literature** for August 9, 1930, the reviewer calls attention to an interesting discovery regarding the origin of the terms **wove** and **laid** as used in designating certain kinds of fine papers. He observes that the first paper made in the East was made on cloth moulds, which produced a wove sheet: the laid sheet which we are wont to think of as older, came in later when bamboo moulds took the place of cloth. Explanations are also given of the terms "antique laid" and "mediaeval laid." In England, wove moulds were originated by John Baskerville, a printer living in Birmingham, the date of his rediscovery of the ancient method of making wove paper being given as about 1750.

Dard Hunter's new book should have a large circulation among the manufacturers of wire cloth for papermaking machines because he devotes much attention in it to the history of wiredrawing for moulds in the early days of papermaking, and every craftsman should be interested in the history of his calling.

George N. Snyder, who has been employed as general superintendent of the Cherry River Paper Company, Richwood, Va., has been appointed superintendent of production and mill management to fill the vacancy caused by the death of Charles B. Brooksbank. Mr. Snyder served as assistant to the late Mr. Brooksbank, and has been connected with the company for the past 15 years.

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Whether you want valves to control low or high pressure steam lines, or oil, gas, air and water lines—there's a Powell Valve to meet your requirement.
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Powell Valves are processed from bronze, iron, steel, and special corrosion resisting alloys. Working pressures range from 125 to 2000 pounds at temperatures to 1000° F.
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ACID, WATER and CRACK PROOF

Particularly adapted for use with Voight Inlet — Careful, Intelligent, Quick Service

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MANUFACTURERS OF

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ANIMAL SIZING GLUE STOCK

LARGEST SPECIALISTS IN AMERICA ON

FINE WRITING PAPER SIZING

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Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

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APMEW EQUIPMENT RETURNS ITS COST EVERY FEW MONTHS TO MANY USERS

Would your Company like to have it produce similar earnings in your mill?

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" Fine Screens
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American Paper Machinery and Engineering Works

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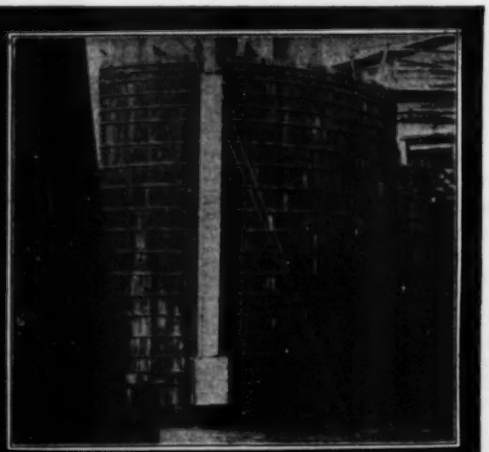

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Wood tanks for paper mills, stuff chests, acid storage tanks, blow pits, beater tubs, alum tanks, rubber-lined muriatic acid storage tanks made of Red Gulf Cypress.

Let us quote on your requirements.

The Hauser-Stander Tank Co. Cincinnati, Ohio

New Catalogues, Books and Publications

Allen-Sherman-Hoff Co., Philadelphia, Pa.—The Hydrovac system of soot and dust handling, a new development by this company, is outlined in bulletin No. 730. The removal and disposal of fly dust and siftings in the modern powdered coal burning power plant without the escape of some particles, requires a totally enclosed system, absolutely tight in every respect. From the description and illustrations given in this booklet, the Hydrovac has been designed to meet these requirements. The construction and operating advantages are clearly explained and drawings and illustrations of the system are shown.

American Paper and Pulp Association, 18 E. 41st St., New York City—C. M. Baker, engineer, has prepared a booklet entitled "White Water Surveys" which has been published by the Engineering Department of the Association for distribution to its members. It is not necessary to guess nor speculate on conditions in your mill. This booklet tells you how to make a competent survey of your white water. Your membership also gives you the privilege of consultation by mail or in person with the Engineering Department of the Association, which is under the supervision of Mr. Baker. This applies to the conduct of the survey, analysis of the results, and the best solution of your own problem.

Metropolitan Life Insurance Co., New York City—The Policyholders Service Bureau of this company has just issued a bulletin entitled "Safety Meetings." This is the eighth in a series of reports based upon a study of the field of safety engineering, and designed to present the principles governing successful accident prevention work as well as tested methods of applying these principles. In this report the types of meetings are discussed which have been found most effective, together with suggestions for making them interesting and helpful to all concerned.

Hyatt Roller Bearing Company, Harrison, N. J.—Bulletin Q of this company has just been issued and pulp and paper manufacturers will be interested in the application of Hyatt roller bearings to pulp and paper machinery. These are described and illustrated in this sixteen-page pamphlet which can be had for the asking.

Reeves Pulley Co., Columbus, Ind.—The new and improved method of providing electric automatic control and electric remote control for the Reeves Variable Speed Transmission is described in a new bulletin just issued. It is claimed that on core winders for paper, on paper waxing and waterproofing machines and on many other production units and conveyors in the paper industry, the new electric automatic control is increasing production and cutting the percentage of inferior goods. Copies on request.

Worthington Pump & Machinery Co., Harrison, N. J.—The Worthington Vertical Four Cycle Air Injection Diesel Engine is described in Bulletin S-500, just received. This engine is of the vertical, slow-speed, heavy-duty, single-acting, four cycle air injection type. Each part of the engine is described in detail and illustrated. There are also a number of pages of diagrams and illustrations of installations.

Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.—A leaflet, L-1978-B entitled Single Motor Paper Machine Drive describes a new drive which is recommended for all paper machines where a sectional individual motor drive is not employed. Copies upon request.

BOOK REVIEWS

Systems of Wage Payments—This volume published by the National Industrial Conference Board, Inc., 247 Park Avenue, New York, gives a non-technical description of various methods of wage payments; it is intended for business executives rather than for industrial engineers. Having no system of their own to sell, and basing their conclusions on the answers received to a widely circulated questionnaire, this publication is quite impartial in its conclusions, and hence is of special value. It presents conclusions drawn from the answers received and also contains clear accounts of the various wage payment systems in use. Included in the text are direct quotations from letters giving testimony to the efficiency or failure of these systems.

The volume begins with a general description of wage systems, accompanied by discussions of the usual time rate method and piece work systems, proceeding from this in a logical manner to a study of the various forms of incentives in wage payments. The systems described include the Halsey, Taylor, Gantt, Emerson, Bedeaux, Haynes-Manit, Parkhurst, and their modifications.

On account of its impartiality, and the understandable way in which the book is written, it forms a valuable study for executives who desire to acquire a general knowledge of the principles underlying the compensation of labor. The price is $2.00.

Human Engineering—The illustrated address or "chalk-talk" delivered by Manly P. Northam, Ph.D., at the eleventh annual convention of the American Pulp and Paper Mill Superintendents' Association, Philadelphia, May 30, 1930, has been assembled in an attractive brochure of fifty-two pages and covers (5 x 7½ in.), copies of which have been distributed to those in attendance. Portraits of President James Garfield Ramsey and Doctor Northam as well as a neatly-executed picture of the banquet scene are included. It is a fine uplifting address and its preservation in permanent form will be appreciated by all who heard him. Copies are being distributed by J. Bertwell White, Marshall Heights, Yorklyn, Del., who was general chairman of the committee in charge of arrangements for the convention.

Techno-Dictionary—The second edition of Hubert Hermanns' Techno-Dictionary has just been issued. This valuable book has been enlarged and completely revised and contains many terms

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How Do YOU Measure Felting Economy?

We venture that you pay mighty close attention to the B.T.U. in the coal you buy, the grade of oil you use for lubrication, or the rate you pay for power—and why shouldn't you?

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A TRIAL FELT FOR YOUR MACHINES WILL PROVE THESE FACTS.

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Let Us Show You How to Solve It

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A NEW PROCESS

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ELIMINATES OR DECREASES WIRE MARK IN THE SHEET.

ELIMINATES SCORING AND CLINGING TO THE BOXES.

It is THE ONLY WIRE WITH A PERFECT SURFACE.

The surface is absolutely smooth and uniform so that YOU CAN MAKE A UNIFORM SHEET OF PAPER.

Use Wisconsin Rolled Wires and IMPROVE YOUR SHEET and SAVE MONEY.

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Lessons in Paper Making

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that did not appear in the previous edition. The author has endeavored to collect the largest possible number of terms to be found in reading foreign periodicals and books. The terms are listed in English, German and Italian in three sections, the words of each of these languages being followed by the same terms in the other two languages. The dictionary is prepared to assist the engineer and business man in reading foreign works. The price is $3.75, published by Hubert Hermanns, Beratender Ingenieur, Berlin-Lichterfelde-West Dahlemer Strasse 64 A.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 46690—Paper bags. Guayaquil, Ecuador. Agency desired.

No. 46720—Blotting paper. Rio de Janeiro, Brazil. Agency desired.

No. 46750—Insulating board for sound proofing and the correction of defective acoustics. Singapore, Straits Settlements. Agency desired.

No. 46554—Paper bags for flour. Bergen, Norway. Agency desired.

No. 46844—Fiber board, insulating. Milan, Italy. Sole agency desired.

No. 46774—Kraft and greaseproof paper. Wellington, New Zealand. Sole agency desired.

No. 46845—Wood pulp. Milan, Italy. Purchase desired.

No. 46839—Packing and paper handling machinery, including apparatus for the binding of blotting paper under hydraulic pressure. Vienna, Austria. Purchase and agency desired.

No. 46997—Cardboard in fast colors. Melbourne, Australia. Purchase desired.

No. 46963—Cardboard, and folding, collapsible boxboards. Glasgow, Scotland. Agency desired.

No. 47035—Cellophane paper in sheets. Cali, Colombia. Agency desired.

No. 46986—Fiber board. Johannesburg, South Africa. Agency desired.

No. 46987—Tissue paper. San Juan, Porto Rico. Purchase desired.

No. 47135—Box, chip, and container boards, fancy box tops, and printed fruit-wrapping tissues. Christchurch, New Zealand. Agency desired.

No. 47203—Crepe papers, paper plates and paper doilies. Sydney, Australia. Agency desired.

No. 47134—Paper cup manufacturing machinery. Mexico City, Mexico. Purchase desired.

No. 47202—Paper cups and straws for soda fountains. Winnipeg, Canada. Agency desired.

No. 47213—Paper dishes and spoons, for ice cream. Kingston, Jamaica. Agency desired.

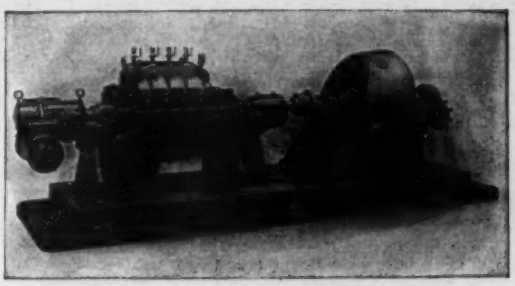
No. 47176—Wrapping paper. Mayagues, Porto Rico. Agency desired.

No. 47179—Wrapping paper, decorated, for confectionery. Lisbon, Portugal. Agency desired.

To Observe George Washington Bicentennial

Elaborate preparations are being made for what is hoped will be the greatest celebration to go down in history in honor of an individual. This memorial will in reality be a series of events to take place during the year 1932 in honor of the two-hundredth anniversary of the birth of George Washington.

Senator Fess is the active head of the George Washington Bicentennial Commission, whose ex officio chairman is President Hoover. Washington will, of course, be the center of this celebration and will bring many visitors during the ten months of the official celebration, but the events will radiate to all parts of the country and foreign countries. Programs are now being formulated and definite plans will be announced later.



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What about the clearances of that pump you're going to buy?

Many pumps rely upon close clearances to obtain high shop test efficiencies, but rapid wear on the case rings causes a noticeable drop in efficiency shortly after the pumps are put in service.

The clearances between impellers and case rings of Warren centrifugal pumps are liberal, ranging from .015" to .025". This means that Warren Pumps do not obtain their efficiencies by close clearances, only to lose them after they have been in operation a short time.

Warren Pumps, with liberal clearances maintain their original efficiencies over a long period of time. What about the clearances of the pumps you're going to buy?

Write for Bulletins describing Warren centrifugal or reciprocating pumps for the services in which you are interested.

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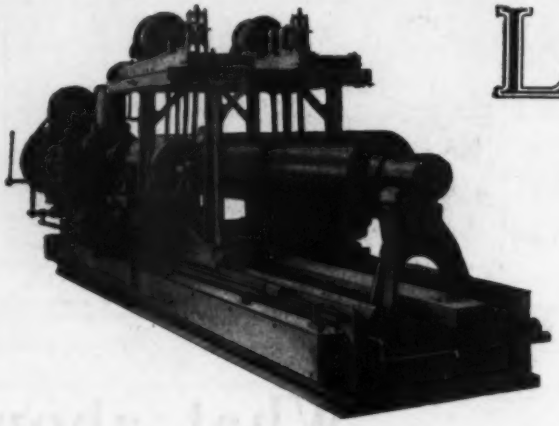

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